Barriers to Implementation of Quality Management Programmes

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by

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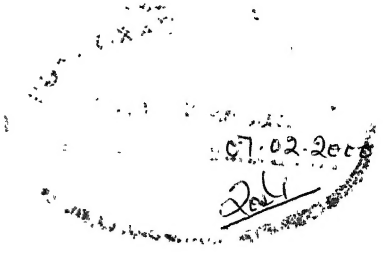

CERTIFICATE

It is certified that the work contained in this thesis entitled **Barriers to Implementation of Quality Management Programmes** by **Manas Ranjan Mishra**, has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

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ABSTRACT

In the post liberalization period, many Indian organizations have taken up Quality Management Programmes (QMPs) in order to compete with global standards. But it has been observed that organizations frequently confront problems during implementation of such programmes. At times, changes initiated for these programmes even lead to tensions within the organization. The present study attempts to explore the problems often confronted by management during implementation of QMPs in Indian organizations.

In the first phase of this study, a pilot study was performed on three organizations dealing with implementation of QMPs to get actual picture of the programmes. The pilot study and review of literature enabled us to identify twenty-four major problems confronted by managers while implementing and managing the QMPs. These problems identified as hurdles towards smooth implementation of QMPs are grouped into four major Factors through principal component analysis. The factors resulted from the study are labeled as 'Managerial Barrier', 'Employee Barrier', 'Organizational Barrier' and 'Systemic Barrier'.

In the second phase of the study a valid and reliable instrument was designed to conduct an empirical investigation of problems. Sufficient response from Manufacturing and Service organizations enabled us to find out the significant differences between these two industries. The empirical investigation not only attempted to explore the problems further in different organizations but also tried to find the linkages of the problems with the organizational context as well as the approach adopted by management while implementing the programmes.

A list of suggested actions for management for reducing / removing the barriers is given. This is established after carefully analyzing the data from the respondents and carrying out the statistical tests on them. Managers involved in the implementation programmes may find it helpful for their organization. It is a generalization and does not refer to any particular industry.

Attempt has been made throughout the study to consolidate our understanding on the barriers within which the 'change agents' have to work while implementing the

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ABBREVIATIONS

EFA	Exploratory Factor Analysis
K W	Kruskal Wallis
M-W	Mann - Whitney
PCA	Principal Component Analysis
QA	Quality Assurance
QM	Quality Management
QMP	Quality Management Programme
SGA	Small Group Activity
SPC	Statistical Process Control
TQM	Total Quality Management

INTRODUCTION

1.1 Quest for Quality

Total Quality Management (TQM)'s origin can be traced back to 1944, when Japan's industry and economy was shattered during the second world war, and the Union of Japanese Scientists and Engineers (JUSE) formed a committee of scholars, engineers and government officials devoted to improving Japanese productivity, and enhancing their post-war quality of life. Japan invited two quality gurus – Dr. Deming and Dr. Juran – to teach the importance of quality to Japanese industrialists when they were trying to rebuild after the war. Influenced by Deming and Juran, the committee developed a course on statistical quality control for Japanese engineers followed by extensive statistical training and widespread dissemination of Deming's philosophy which taught them: the value of PDCA (Plan – Do – Check – Act) cycle, the managerial significance of the distinction between special and system causes of variation, and to view an organization as a system (an independent system of stake holders). The Japanese listened to these experts with all attention and put their teaching into practice religiously. The quality and consequently the competitiveness of Japanese industry started improving steadily. Soon they caught up with the western world – USA and Europe – and started excelling them. In 1970's, when the US automobile industry was hit by the competition from Japanese models in its own market, the western world realized the progress made by Japan due to her stress on quality.

In the 1980's, when the U.S. and the European companies lost the market to their Japanese counterparts, they realized that their only way of surviving in the business was to pay much greater attention to quality. This quality is not confined to the quality of a product or service. It applies to delivery, administration, customer service and every aspect of company activities. It encompasses all the ways in which the company meets the needs and expectation of its financial stakeholders, its customers and community in which it operates. Realizing this emerging requirement of quality for competitive advantage, companies in the U.S. and Europe adopted strategic approach towards quality. The impact that quality movement has made on American management practices is both more influential and pervasive than any other fad or innovation that emerged during the last two decades. It is both fundamental as

influences the work practices of individual employees. At the same time, its success within organizations critically depends upon the ability of the proponents to generate consensus and momentum through making converts [Krishnan et al., 1993].

American firms began to take serious note of TQM around 1980, when analysis and policy leaders decried traditional managerial practices such as elitist leadership, short term thinking, financial orientation, lack of motivation, declining productivity and adversarial supplier relationship. Quality Management Programmes (QMPs) were started in a serious way by the high profile American firms - such as Ford, Xerox, Motorola - after loosing the market to more efficient and high quality Japanese producers. The effectiveness of the programmes were demonstrated by the remarkable business turnaround that these companies have achieved. In all these companies QMPs were highly successful, not just in improving product or service quality, but also in improving competitive and financial performance, enriching the jobs of the employees and transforming corporate culture. These firms under the guidance of Deming and other quality consultants, benchmarked Japanese practices and were among the first TQM adopters. Soon after, others joined in the march towards TQM.

In 1991 when the doors of the economy were opened and MNCs were encouraged to operate in Indian markets, majority of Indian manufacturers and producers and providers of goods and services were not aware of the terms like customer satisfaction and quality control. As one executive puts it " Can you believe it, they (Indian Consumers) now have the nerve to actually demand good quality products?" Today Indian corporate is in some sense in a similar situation as U. S. industry was when Japanese invaded their markets in the mid 1970s. The market environment is fast changing, with liberalization in economy resulting in an open and competitive market. Till the days of closed economy and start of the era of deregulation, average Indian companies were taking the customer for granted and remained ignorant of the altered situation in the mistaken belief that the quality control is a cost enhancing, production hampering nuisance fetching no bonuses in the domestic market. Now in an open market, the customer has a choice and is demanding his penny's worth of quality. The challenge faced in industry today is to acquire a competitive edge by manufacturing product of high quality at low cost, which is not an easy task. The logical path to accomplish this objective is successful implementation of quality improvement programmes in all areas of work, involving all employees and eliminating all types of waste on a continuous basis [Anand, 1996].

What Japanese industry did in 1950s and 1960s after the World War II wrecked the entire industrial set up of the country, and what the American companies did in the 1980s to face the battle with their Japanese counterparts in the market do provide the Indian companies a guidance to gear up to face the challenges ahead. Most of the Indian companies are trying to implement some sort of quality improvement programme as last resort to defend itself from the tidal onslaught of global quality and some of them are showing considerable achievements. Today, quality is becoming a catchword in corporate India.

1.2 Rationale of the Study

The literature in the field of quality is highly normative and rather practitioner-oriented. The reporting by press, government agencies, and academic research of QMP results are sometimes strongly biased. While benefits of quality management initiatives have been highly publicized, and the achievements of exemplary companies much lauded, there is also a darker side to the 'quality revolution'. Many companies that have embarked upon the programmes inspired by the quality gurus like Deming, Juran, Crosby, have given up during the early stages of implementation [Krishnan et al., 1993].

A McKinsey study in Europe and United States found that two thirds of all quality improvement programmes fail to show the expected results. The Economists reports that of those programmes that have been in place in western firms for more than two years, two third simply grounded to halt because of their failure to produce hope for results. The failure of QMPs in various companies show that there are serious loopholes in the whole implementation process which are yet to be explored properly. When such instances of failure are abound, the novelty of the whole exercise begins to wear off and people begin to loose interest [Business Today, 1998].

The literature is yet to develop a theoretical and empirical base to understand the implementation of QMPs and the problems often encountered during the process of implementation [Ahire, 1995; Krishnan, 1993]. The effort to understand the hurdles faced during the implementation of QMPs has began only recently. Researches conducted in this direction are highly specific to western world and handful in numbers. Indian organizations have a different kind of structure, with different type of people and are in a different kind of environment. So studies conducted exclusively in Indian companies implementing QMPs can

give better understanding of the problems faced by them while going to implement the programmes. Some researchers [Vrat et. al., 1998; Anand, 1995; Jha, 1998] though attempted to address some problems associated with QMPs in a Indian context, a comprehensive understanding of the problems still needs further exploration in this direction. This study is an attempt towards this objective. The research endeavours to explore the problems often faced by managers involved in the implementation of QMPs in Indian organizations and their linkages with the organization context as well as the approach of the management towards the implementation process.

A considerable amount of research on Quality has been focussed on Quality Management (QM)/Total Quality Management (TQM) practices [e.g., Juran, 1978; Forker, 1991; Chong and Kukalis, 1991; Lewis, 1992; and Goh and Ridgway, 1994], the application of Statistical Quality Control (SQC) techniques [e.g., Deming, 1981; Giltow and Hertz, 1983; Clements, 1989 and Bissel, 1994] and critical factors pertinent to QM/TQM implementation [e.g., Feigenbaum, 1976; Saraph, Benson and Schroeder, 1989; and Porter and Parker, 1993]. However, little has been done to address the issue of potential barriers to the successful implementation of QM/TQM. Barriers to QM implementation may be thought of as 'obstacles along the road' that may hinder or cause difficulties in the successful implementation of QM in an organization. Many companies that have attempted to implement QM/TQM or quality programmes have experienced difficulty in achieving success. Research based on North American experience has estimated that four out of five quality improvement efforts initiated by the companies have either failed or experienced false starts [Keiser and Smith, 1994]. The present attempt is an independent research project to understand the potential barriers for the successful implementation of QM in an organization.

1.3 The Research Objectives

The broad objectives of the research are as follows:

- To identify the relevant attributes which make up the potential barriers to TQM implementation.
- To determine the perceived levels of the barriers in the areas identified.
- To investigate whether there is a difference in the perceived levels of the barriers to implementation of TQM by quality practitioners between the service sector and the manufacturing sector.

- To use a suitable analysis to group the potential barriers as developed above into proper factors.
- To develop a tool for empirical investigation of the problems
- To understand the linkages of the problems with organizational context as well as the approach adopted by management towards the implementation process

1.4 Plan of the Thesis

The first chapter of the thesis has discussed the rationale of the study, research objectives and plan of the thesis. The second chapter reviews the relevant literature compiled from diverse sources. The third chapter builds the research framework for empirical investigation and discusses the methodology adopted for empirical investigation. The fourth chapter presents the analysis of data collected from various organizations in India. The final chapter presents the research findings, its limitation and scope for further research work.

REVIEW OF LITERATURE

2.1 Introduction

Quality Management (QM) is an approach to improving the effectiveness and flexibility of business as whole. It is a way of organizing and involving the whole organization; every department, every activity, every single person at every level. For an organization to be truly effective, each part of it must work together, recognizing that every person and every activity affects, and in turn is affected by, others [Oakland, 1989].

QM is a method for ridding people's lives of wasted effort by involving everyone in the process of improvement; improving the effectiveness of work so that results are achieved in less time. The methods and techniques used in QM can be applied throughout the organization. They are equally useful to finance, sales, marketing, distribution, development, manufacturing, public relations, personnel and to every one of company's activities.

There is a long history of evolution of Quality Management Programmes (QMPs) starting from the effort to rebuild Japanese industry after World War II. QMPs have seen a number of changes over the last two decades. During the 1970s, the quality focus was on effective sampling techniques for identifying and eliminating defective products. In the 1980s, the emphasis switched to statistical process control (SPS) and to finding the defects at the source rather than picking them up later on, that led to the philosophy of 'doing it right the first time'. Statistical controls continue to play a major role in all quality initiatives. But later on, SPC has been replaced by customer consideration. In fact, the quality movement has moved out from using a few statistical charts to looking for what customer really wants [Lee, Luthans & Hodgetts, 1996].

All QMPs have basically grown around the ideas of Gurus like Deming, Juran and Crosby with major contributions from Feigenbaum, Taguchi, and Ishikawa. Edward Deming provided the techniques and rationale. Phil Crosby taught the concept of computing cost of bad quality and promoted the concept of zero defect as the only valid target. Armand Feigenbaum and Kaoru Ishikawa wrote about Total Quality Control. Joseph Juran offered the

concept of Total Quality Management, which calls for project-by-project continual improvement [Schonberger, 1997].

Any company today seeking to embark upon a programme of quality improvement faces a variety of programmes, standards and approaches. The leading American companies that demonstrated considerable achievement through QMPs have christened their programmes under different names - like Motorola's "Six Sigma" programme, Ford's "Total Quality Excellence" programme or Hewlett-Packard's "Quest for Total Quality". The ISO 9000 specifications of the International Standards Organization of Geneva, Vendor rating certification such as GM's "Mark of Excellence" and even the innovations in the field of manufacturing and production like "just in time" or "concurrent engineering" are all included under one banner of 'Quality" [Krishnan, 1993]. Although the specific approaches of the companies to achieve 'competitive edge through quality' varies and different organizations embrace different programmes as a part of their QMPs, all these programmes share some common components - continuous process improvement, people orientation, use statistical techniques to solve problems and above all customer focus - that builds the philosophy called Total Quality Management [Beistle, 1993].

2.2 Total Quality Management - A Brief Overview

Total Quality Management (TQM) means many things to many people. Unfortunately it has come to be associated more often with statistical methods, such as statistical process control and design of experiments, than with a method of management.

In its true sense TQM is a means of operating business that seeks to maximize a firm's value through maximizing customer satisfaction at the lowest possible cost. Maximizing customer satisfaction at the lowest possible cost is achieved by continuously improving all processes within a company and empowering employees [Spitzer, 1993].

TQM not only involves customer satisfaction, continuous improvement and empowering employees, it also involves education and training of employees, cultural change and strategic processes. So TQM can also be defined as an organizational strategy and accompanying techniques that result in the delivery of high quality products and/or services to customers. [Lee, Luthans and Hodgetts, 1996]

British Quality Association defined TQM as a corporate business management philosophy which recognizes that customer needs and business goals are inseparable. It is applicable within both industry and commerce. It ensures maximum effectiveness and efficiency within a business and secures commercial leadership by putting in place processes and systems which will promote excellence, prevent errors and ensure that every aspect of the business is aligned to customer needs and the advancement of the business goals without duplicating or waste of effort.

The commitment to TQM originates at the chief executive level in a business and is promoted in all human activities. The accomplishment of quality is thus achieved by personal involvement and accountability, devoted to a continuous improvement process, with measurable level of performance by all concerned. It involves every department, function and process in a business and the active commitment of all employees to meeting customer needs. In this regard the customers of each employee are separately and individually identified.

2.3 Implementation of QMPs and Organizational Change

It is often seen that most of the organizations go for implementing QMPs in a mechanistic way. Managers do not perceive the implementation as a process of proactive organizational change. QMPs are not just quick fixed solutions that can be grafted on an organization. Implementation of QMPs is, in fact, all about managing change, moving from a current reality to a more appropriate one, yet rather than being presented with a clearly defined problems to solve, a manager must deal with a mess of interacting issues [Bennett & Kerre, 1996]. Like other organizational changes, the implementation process of QMPs is also accompanied by organizational conflict. So any implementation process to be successful an appropriate strategy for managing the change process will need to be adopted. This strategy, on the other hand, should recognize the likelihood of the problems to be encountered as a result of the resistance to the organizational changes. Unfortunately literature is quite weak in this direction. There are professionals and academics studying QMPs as well as organizational change, but very few of them are studying the programmes as organizational change [Pike & Barnes, 1996]. As a result, literature lacks proper application of organizational theory. "Many approaches to manage quality have been proposed by practitioners and academics including Gurus like Deming, Juran, Crosby and Feigenbaum. None of these prescriptions have been derived from organizational theory. Rather, they are based on author's many years of practical experience in the field of quality" [Benson, Saraph

and Schroeder, 1991]. However, it has been observed that in the recent years a few researchers in the field of quality have addressed certain issues pertaining to the implementation of QMPs in the light of organizational theory. The proceeding sections of this chapter present a brief account of the issues addressed in the literature in this direction.

2.4 Top Management Commitment

To achieve a TQM based competitive organization, the issue of leadership has to be at the heart of any drive, desire or determination to compete on quality ground [Zaire, 1990]. Views of quality gurus about this extremely important factor for a total quality movement are as follows:

- ***Crosby:*** *responsible for quality*
- ***Conway:*** *bottleneck is located at top of bottle*
- ***Dr. Deming:*** *responsible for 94% of the quality problems*
- ***Dr. Juran:*** *less than 20% of quality problems are due to workers*

In sum, all assign the responsibility to drive an organization towards the total quality to its committed leadership. According to them, TQM must be truly company wide and it must start at the top with CEO, or equivalent, and senior management, who must demonstrate that they are serious about quality. Middle management play an important role to this commitment by explaining TQM principles to the people for whom they are responsible, within each and every department of the company at all levels, starting at the top, basic changes of the attitudes will be required to operate TQM.

Top management is responsible for initiating and supporting a vision towards TQM. Executive actions speak louder than words. The role of the leaders is particularly important in TQM organizations because the role of the middle managers has changed. Their traditional role as the authoritarian head has changed. Empowering supervisors and middle management for building their teams give them a clearly defined role to play in development of TQM program. While an intellectual understanding of quality provides a basis for TQM, it is clearly the planting of the seed. The understanding must be translated into commitment, policies, plans and actions for TQM to germinate [Oakland, 1989].

Management's willingness to invest the time and resources to get to know and understand what the customer needs and expects is an indicator of commitment to quality [Tunks, 1992].

Top management commitment has been recognized as one of the most important elements necessary for the introduction of TQM systems. Their primary responsibility is to provide enough financial support and adequate resources for building a successful TQM system. Lack of financial support and adequate resources means failure. Besides these primary supports, psychological and behavioral support is also important in making the development go smoothly, especially when there is great resistance from some of the people involved.

2.5 Limitations of Enabling Structure for Implementation of QMPs

An appropriate organizational structure is always necessary to manage quality initiatives in any organization. But the most challenging task is to determine the appropriate organizational structure to support these initiatives. One of the major ideas behind implementing these QMPs is to become customer oriented. By implementing QMPs, an organization tries to become more responsive to the customers. This requires a high degree of integration among various functions; the organization performs as well as complete elimination of bureaucracy. In the words of Deming, an organization 'needs to break down the barriers between departments' to become customer responsive. According to Schlesinger [1996], an organization going for implementation of quality initiatives can use the concept of boundarylessness in their process. Boundaryless organizations keep people in the organization close to their customers both internal and external so that they can hear, see and feel customers requirements. Practices that impede process improvement and promote wasted effort are decreased. Any process or action in the organization is viewed in terms of the added value to the organization as a whole and not to the unit or function of which it is a part.

A boundaryless organization may be the ideal organization for implementing QM initiatives. But the critical problem is how to change a traditionally hierarchical organization to a boundaryless one. It was not mentioned anywhere in the article. Generally organizations implementing QMPs do not change the original organizational structure through restructuring activities. Instead they accept the existing hierarchy and try to use it to produce system improvements. They place more emphasis on internal customer relationships and much less emphasis on restructuring work or work situations to make individuals and work teams more autonomous and individually responsible for dealing with customers [Lawler III, 1994]. Instead of changing the original hierarchy, in most of the organizations QM initiatives are managed by a parallel learning structure having some interfunctional and interdepartmental teams. The parallel organizational structure made to manage QM initiatives involve steering

committees, quality improvement teams, and quality councils with a variety of roles and pet names. This structure is generally overlaid on the existing structure rather than adding to the staff functions [Pike & Barnes, 1996]. Such a supporting structure incorporates elements from both the formal and informal organizations and functions essentially outside and parallel to the formal organization. It has structure of its own and operates under different rules and principles from the formal organization. It creates a new combination of people and charges them with quality improvement related tasks. In fact, quality programmes try to reinforce rather than challenge the mechanistic and hierarchical understanding of organizations subscribed to by a majority of managers. Thus a more effective implementation of quality initiatives as defined by quality gurus may generate even more problems than they solve [Knight & McCabe, 1997]. The problems inherent in the enabling structure as well as when it functions with functional structure of an organization. Problems can arise from conflict between the quality management and formal functional structure. When quality task forces are made up of junior level managers, there is a risk that their effort will be stifled by the formal structure. For a system of task forces to be effective, either senior level managers must be involved, or the CEO must throw his or her weight and influence behind the quality groups [Krishnan et al., 1993].

2.6 Employee Involvement and Empowerment

Employee involvement (EI) programmes have a positive effect on the performance of the company and the internal business conditions [Lawler, 1992]. As more and more organizations delayer and downsize to increase productivity and reduce costs, involving employees in decision making reaps various advantages. With fewer layers of management to supervise work, and with the nature of the managerial job changing from control to facilitate, organizations must have employees who can take decisions [Kotter, 1990]. EI programmes can be seen as opportunity in the competitive market environment. The main idea of employee involvement is to enable decision making down to the lowest level in the organization. This does not mean that all decisions must go to the lowest level, rather it means that each employee has the information, the perspective, the tools and the power to take decisions related to their work. Though TQM involves some of the same elements of the employee involvement programme, there are certain differences in the two approaches [Lawler, 1992].

Involving employees in the decision making also requires that management share power across the organization, otherwise employees would be unable to make decisions that affect their work. Parallel organizational structures that involve teams and committees, which are separate from the normal procedures of the organization, are one way that employees can be involved. Activities like Quality Circles, Quality of Work Life Group and other group activities are some of the parallel structures used to transfer power down the organization. Suggestion programs are another way organizations try to transfer power [Schlesinger, 1996].

The extent of power given to the employees involved in different cross functional group activities can be a major constraint to them while implementing their decision. Tom Peter's book, *Thriving on Chaos*, outlines the findings of an assessment of the problems faced by different Quality Circles and mentions that failure of the organizations to implement the proposals of the Quality Circles is a major problem faced by the whole programme [Pike & Barnes, 1996]. Unless employees involved in group activities are empowered properly to implement their decisions there can be very less impact of these programmes in the organization. According to Thompson [1998], the cross-functional teams involved in different quality related projects can become successful in achieving their goal when they are given high autonomy. Higher level of autonomy appears to increase the probability that the team will accept a stretch goal, and the team's control over how work is done appears to increase the likelihood that team will achieve the stretch target. For a team to have more autonomy and control the organization must become bureaucratically immune. Bureaucratic immunity can give a team freedom from lengthy review process needed to take a decision in an organization. Teams often get full control with minimum interference from the other parts of the organization.

In a traditionally hierarchical organization it is often difficult for the teams to get full autonomy in their work. In these organizations, managers love empowerment in theory, but the command and control model is what they trust and know best. For their part, employees are often ambivalent about empowerment - it is great as long as they are not held personally accountable. Even change professional often stifle empowerment. Thus, despite all the best effort that have gone into fostering empowerment, it remains very much like the "emperor's new cloth"[Argyris, 1998].

Employees must have confidence in the TQM system. In order to achieve this, one has to pass the message that TQM offers employees the challenge, training, tools and authority to

self-manage their work. Jobs will grow richer and more fulfilling as one makes the changes needed for continuous improvement. One will gain greater job security, leadership training and higher pay.

2.7 Support of Union to QMPs

Change implementations must have broad-based support for change from across the organization. The support of a strong leader always helps in the process of implementing change. TQM's emphasis on communication, synergy, and employee involvement makes it possible for informal leaders across the organization to be tapped as key sponsors in the process of implementation [Schlesinger, 1996]. Most of the organizations implementing TQM initiatives try to ensure that the union does not become a barrier. Union may not have any desire to see quality programmes fail, but they cannot be expected to simply stand on the side lines and watch their roles being changed and their members' jobs being altered without any consultation. So ignoring the union may simply give rise to suspicions that central purpose of the exercise is to reduce their influence and as a result the process of implementation may get doomed before it even started. [Pike & Barnes, 1996]

Managers in their attempt to influence the union may adopt manipulative techniques like co-optation. Co-optating an employee usually involves giving him or her a desirable role in the design and implementation of the change programme. Co-optating a group involves giving one of its leaders, or some one it respects, a key role in the implementation of the change. But this is not a form of participative management as advocated by quality Gurus. [Kotter & Schlesinger, 1979]. Still some form of co-optation is always used by the management before implementing a TQM programme. A quality council is often used as a suitable vehicle to involve the union leaders and other opinion leaders in the planning of TQM implementation. It also helps in securing the views and suggestions of those at the sharp end on how the methods and activities are to be carried out in the whole process of implementation [Pike & Barnes, 1996].

Advocates of employee involvement argue for a coherent relationship between labour and management that makes union partner in the organization's success and regards them as critical players in helping the organization achieve its goals. This kind of a relationship is much more compatible with total quality management efforts. The union also assumes responsibility for quality, thus creating opportunity for more systems thinking and more

problem solving. These relationships also help to create a climate in which employees participate in many of the important decisions affecting quality. In the absence of union support for employee problem solving and union/employee participation in improvement groups, there is a danger that the employees will not trust the process, and union will ultimately reject the activities that are part of the total quality programme. [Bowen & Lawler III, 1997]

R. E. Walton, in one of his articles [1985], discusses the issue of union/management relationship during implementation of a change programme. He says that while implementing change programmes some companies seek to decertify their union bond, at the same time strengthen their employees bond to the company. Others pursue co-operation with their unions, believing that they need their active support. The interest of the management in seeking union's co-operation intensified in the late 1970s when it became clear to them that only by work force effectiveness they cannot survive in the market and they need some wage negotiations with the workers. The collaboration between union and management in the employee involvement programmes like Quality of Work Life gave the union the opportunity to influence over matters which were previously subject to management control. At the same time it also left scope for the management to use these programmes as a platform to appeal to the workers directly in issues like wage concession.

Review of the existing literature has enabled us to identify certain key issues that need to be explored deeply to understand the hurdles faced by the change agents while managing the implementation of QMPs. It can be expected that a better understanding of these issues can itself show the way to implement the change programmes like QMPs smoothly in any organization.

2.8 Customer Focus

The main objective of quality improvement is to place customer's needs and requirements at the forefront of a company's quality improvement strategy [Newall, 1991]. Because of increasing customer awareness and expectations for improved products and services, customer focus has now become a key element of product and service quality. An organization must recognize that the purpose of all work and all efforts to make improvements is to serve the customers better. This means that is must always know how well its outputs are performing through measurements and feedback. Various techniques such

as quality function deployment, customer surveys and multiattribute modeling is used for feedback and response.

Another aspect of customer focus is aimed at determining the needs of a customer before he/she becomes aware of that product/service. Product characteristics are categorized as "must be" and "attractive". These "attractive" characteristics are the latent or hidden requirements, meaning that if they are not present, customer is not aware they are missing. Their absence doesn't detract from level of customer satisfaction, however, if they are present satisfaction increases dramatically [Juran, 1989]. IBM's Polaroid service and illuminated telephone dials for dark room users from Bell's laboratory are some such examples. Also many quality awards such as Malcolm Balridge and CII-EXIM award have assigned a high weightage to customer focus of the application organization [Rao, 1996].

Organizations seeking internal and external customer complaints and suggestions for improvement are aiming at obtaining feedback. TQM is based on the concept that everyone has a customer and that the requirements, needs and expectations of that customer have to be met everytime. This concept requires a thorough collection and analysis of customer requirements, and their feedback, both positive and negative [Matherly and Laster, 1993]. Without a customer feedback system, no one knows how one is performing which is absolutely vital in building commitment and motivating one to constantly improve. Regularly letting management know how customers think about the service they received is very important. One way to do it is to build a customer feedback system to drive continuous quality improvement.

2.9 Quality Training and Education

An essential part of any QM program lies in magnitude of training imparted to its organization constituents. TQM requires that employees learn more than simple job requirements. They must understand the values inherent in the organization's vision, techniques and methods unique to TQM – SPC, Quality Circle activities, cross-functional teams etc. [Holpp, 1989]. It is critical that training

- Be delivered on job, with real world relevance and application time.
- Be delivered as needed, coordinated with the needs of employees
- Be provided to employees at all levels simultaneously so that clear message is reinforced all at once.

- Play an active role in need diagnosis, developing and delivering the training.

A comprehensive training plan which includes a list of training courses that collectively can meet the training needs of an organization on all dimensions [Juran, 1988]. These dimensions cover:

- Fundamental concepts, such as the definition of quality and role of quality in business mission.
- Processes like quality planning, control and improvement.
- Hierarchical levels in an organization.
- Various organization functions such as marketing, finance etc.
- Tools and techniques essential for quality.

In TQM programs, organizations become dependent on teams and teamwork. Most people need to learn to influence each other and those over whom they have little, if any, control. Employees also need to learn how to handle group dynamics so that meetings can be effective. Training programs can be used to communicate TQM message throughout the organization. As Oakland (1989) puts it, training is the single most important factor in actually improving quality. For training to be effective it must be planned in a systematic manner. Quality training must be on a continuous basis to meet changes in technology and environment in which an organization operates. Planned and systematic approach includes following steps in the given order; specifying quality training needs, preparation of training programmes and materials, implementation and monitoring, and finally assessment of overall effectiveness. It is also important that training should be at all levels and neglect in any of these areas will delay implementation of TQM and may in some cases cause failure of the program.

It has been observed that organizations carry out quality training purely as an educational process. For example, many managers and supervisors have been trained in quality improvement process but they have not applied the tools to actual job conditions. Such practices do not produce the result as expected. Therefore, it is essential that quality related training should be applied to existing processes and jobs within the organization. Cross training of personnel will help eliminate inter-departmental barriers and promote teamwork (Pindur and Kim, 1993).

2.10 Conflicting Quality goals within the Organization

Any company seeking to embark upon a program of quality improvement faces a bewildering variety of programs, standards and approaches. Should a company follow one of the gurus. like Deming, Juran or Crosby? Should it model its efforts on the programs instituted by a leading U.S. corporation: Motorola's "Six Sigma" program, Ford's "Total Quality Excellence" program, or Hewlett-Packard's "Quest for Quality"? Should the company seek external certification through the American Society of Quality Control's Q-90 criteria, the ISO 9000 specifications of the International Standards Organization of Geneva, or Vendor certification such as Ford's "Q-1 stamp of Approval", or GM's "Mark of Excellence"? The choices are further broadened once we consider that many manufacturing and production innovations, like concurrent engineering, re-engineering, JIT, and fast-cycle manufacturing are increasingly being implemented under the banner of 'Quality". Once companies have bought into all-embracing slogans such as "Quality is the competitive edge"- the challenge faced by managers is the place to begin.

Selecting a program and implementation method cannot be done until the company considers carefully what it is trying to achieve through a QMP. Central to the formulation of goals is the question "Who sets the quality standards?" There are two approaches to this issue. The first approach is to argue that the company must pioneer new standards of excellence and set targets for performance, consistency, and reliability on its own terms.

Multiple quality management initiatives, each with different goals, have the potential for producing confusion among employees [Krishnan *et al*, 1993]. QMPs at Northern Telecom were effective to the extent that individual employees had internalized quality goals by defining quality in relation to their own jobs and experiences. The employees were unable to see beyond their departmental goals towards broader meaning of quality. This created the potential for conflict among different departmental goals and between departmental goals and broader corporate goals.

2.11 Changing Employee Attitude

Introduction of TQM into an organization will always result in some changes. Change in employee attitude is one of them. Change in attitude is difficult; however, this is a key element of the process of quality improvement, and it is regarded as the most difficult aspect by many authors [Atkinson, 1993; Matherly and Laster, 1992; Ramirez and Loney, 1993]. It

surely takes a long time to develop an employee attitude that is conducive to continuous quality improvement. Most of an organization's culture is hidden from view (Atkinson, 1993). That is one of the reasons why change in attitude is so difficult. TQM means that the entire culture is changed with respect to how people perform their jobs and relate to others in the organization. We can say that to create a TQM a culture requires a major shift in employee behaviour, attitude & style and communication.

Employee attitude poses the greatest hurdle in the way of implementing new ways or methods of doing things. They are not susceptible to change as per the requirement of the Quality Management system [Reeves and Bednar, 1993].

2.12 Employee's Resistance to change

There are several reasons for resistance to change in an organization which include fear and technical considerations. Some other reasons may be:

- TQM may reduce the need for some types of jobs
- Shifts in communication pattern, organization structure, influence, authority and control.
- People need to learn new skills in TQM and their jobs may be redesigned.

The organizational changes may possibly generate resistance to change because they could lead to erosion or loss of power, influence, prestige, authority, technical expertise, job security etc. This resistance to change can be at the shop floor level where it may cut across traditional working practices, and also among the professional, supervisory and managerial staff. Managers, in particular, may feel that they have much to fear of TQM, not least given the emphasis on empowering their subordinates. As an executive puts it, "Hesitance about introducing new systems and practices due to personal insecurity about change" [Sohal, Samson and Ramsay, 1998].

2.13 Recognition and reward systems

Reward and recognition are essential reinforcers of a culture focused on quality and innovation. They are the key elements of the goals and values of such a culture. What gets measured and rewarded gets done well. Incentives are the motivators in an organization (Spiker, Chamberlain and Chua, 1992). Incentives come in form of, among others, pay raises, bonuses, promotions, stock ownership and formal recognition. Rewards and bonuses can achieve extra movement but, once given, they are taken for granted. The carrot may get the

donkey on his feet, but it is the master that is motivated to proceed [Teboul, 1991]. Appropriate rewards provide incentives for employees to participate in quality improvement efforts and tangibly and visibly demonstrate top management's commitment (Reeves and Bednar, 1993).

An important lesson that Motorola and other successful users of TQM have learned is that the rewards for quality improvement must be shared with the participants responsible for the improvement. This is accomplished through performance based reward systems; as the quality improves, bonuses, salary increases, and gain-sharing plans go into effect for those responsible. Other possible rewards include increased training, promotions, and the opportunity for people to use their creative abilities and skills. Such performance based reward systems are a key to the difference between talking about quality through advertising slogans and sophisticated plans, and actually delivering quality [Lee, Luthans and Hodgetts, 1997]. Rewarding personnel for quality improvement is "win-win" deal for the organization. The workers are rewarded, and the company generally enjoys higher profitability.

2.14 Underdeveloped measurement of quality

Having conveyed the false message that activities will inevitably produce results, the management compounds the crime by equating measures of activities with actual improvements in performance. Companies proclaim their quality programmes with the same pride with which they would proclaim real performance improvements – ignoring or perhaps even unaware of the difference. In a leading U.S. corporation, a group of quality facilitators could not enumerate the critical business goals of their units, as they were not aware how to measure it [Schaffer and Thomson, 1992]. Having no measurement process or ineffective measurement techniques, failing to maintain accurate and reliable data, and failing to provide sufficient access to data run counter to Quality Management principles.

Measurement is a trigger for quality improvement. No measurement and nothing will get done. One of the reasons why TQM systems failed is because no measurement was taken. Quality measurement is less advanced in service industries. This lack of developed instruments for measuring quality of services is a major impediment to a successful quality management system (Cheng and Ngai, 1994). The measurement problem is often the case with service industries. Service quality is an abstract and elusive construct because of three

unique features to services: intangibility, heterogeneity and inseparability of production and consumption (Parasuranman, Zeithaml and Berry, 1988).

In a survey carried out by Coopers and Lybrand L.L.P. (C & L) in conjunction with ASQC in 1994 found that organizations preferred measurements in quality to be done in multiple dimensions. They were conscious of using multiple measurements (specifically, quality, cost and time measures) to assess organizational performance. They also recognized that single measures are no longer sufficient as a benchmark for gauging business performance.

2.15 Vision or mission of the Organization

A clear quality vision and mission of where the organization is heading is important. It can turn people on and motivate them to achieve. In many organizations, vision and mission are regarded as just words on paper and they don't act as a guide to action. The use of a bland vision can be counterproductive when people repeat slogans, instead of thinking through what needs to be done in a particular set of circumstances (Coulson-Thomas, 1992). Also too much vision and mission can lead to fragmentation and conflict.

It has been found that, once implemented, Quality Management programs take 3-5 years to show results. But by this time, usually, the management gets impatient and leaves the program or loses interest in it. This causes the failure of the program. Usually for personal gains, the management focuses on short-term goals, which are often in contradiction to the organization goals. This in long term leads to failure of the program.

2.16 Inadequate use of Teamwork

Teamwork has two major benefits:

- It helps organizations develop products or services that can be brought to market faster than ever.
- It helps pinpoint the problem areas and resolve them before the product or service is delivered to the customer.

Ford used this technique to develop both the Taurus and Sable model and now a days, most of the companies are using cross-functional teams to reap the maximum benefit out of it [Lee, Luthans and Hodgetts, 1997]. Removing barriers between employees and managers builds openness and dialogue in ongoing management processes and begins to change the nature of

the organization. Self-controlled, self-managed and self-directed workteams, employee involvement processes and dialogue should be built into the organization. With employee involvement, costs may be reduced, productivity increased and this becomes long lasting if employees are empowered for organizational improvement.

Another important reason for using teams is to get employees involved in more than their individual tasks and thus more focussed on the goals of the organization. For this reason, teams sometimes draw their members from both within the organization and from outside. This broader perspective serves as an antidote to an "I just do my job" mentality [Thompson, 1998]. Complacency in teams will inhibit the progress of the quality management programmes. To be effective, teams need trained facilitators, a mission or purpose, a time frame for completing projects, members who represent the functional areas of the process to be improved and accountability. The mission of the teams must not be overwhelming; some tasks might need to be broken down into manageable phases [Masters, 1998].

2.17 High turnover or changes in key executives

Quality Management Programmes come into an organization through initiative of top management or people at the top most level of the company. They set goals for the programmes keeping in mind the specificity of their organization. These are the people who know the broad strategy of the organization. A study has found that top manager's perceptions reflect a more general and organization wide orientation towards quality management implementation. Hence any change in these levels in the middle is bound to affect the outcome of the programmes. It has been found that the Quality Management Programmes, once implemented, take on an average about three years to show results [Reeves and Bednar, 1993].

The turnover rates of key executives are higher in certain industries. People are concerned about the long-term viability of the TQM program when new TQM programs are championed by executives who subsequently leave. The high turnover of key executives is certainly a barrier to TQM implementation (Reeves and Bednar, 1993). In some cases, the programmes may not get abandoned if the organization gets a suitable replacement, but the programme gets delayed significantly as the new leader takes time to adjust himself with the new organization.

2.18 Internal communication networks

This involves communicating top management's strategy of Quality Management and rallying teamwork among all the personnel who support it. Then they have to communicate it to the employees of the organization. Some of the important ideas that should get communicated include:

- Getting everyone to realize that quality is a responsibility of the entire organization and not the exclusive domain of the quality control department.
- Diagnosing and finding out how prepared the personnel are to accept a Quality Management strategy.
- Identifying key "movers and shakers" who can help communicate and sell Quality Management ideas to others and then motivating these people to accomplish quality management goals.

One of the biggest challenges is to close the gap between what management is saying and what the employees perceive is happening [Lee, Luthans and Hodgetts].

Ineffective communication networks cause breakdown in communication: problems are not communicated upwards and messages are not communicated downwards in an organization. In any organization, there should be formal and informal communication networks. Formal communication networks typically follow the formal reporting relationships of the corporate structure. Informal communication networks take place outside the formal reporting relationships. Multi-disciplined teams break down formal reporting relationships and communication is enhanced by direct contact (Spiker, Chamberlain and Chua, 1992).

2.19 Quality Management Knowledge and Expertise

People have the narrow vision of viewing TQM only as a management system of statistical process control (SPC). While statistical measurements have become an important element of TQM, they are only a part of the process leading to continuous quality improvement. To understand and utilize TQM, we need to establish a common understanding and acquire an adequate knowledge of what TQM really is.

This problem is more serious in service industries. Many service industries have hired consultants from manufacturing industries in order to gain insights into raising quality assurance departments (Lefevre, 1992). Management rarely have experience in handling

changes arising from implementation of TQM. External consultants may be consulted to help in the design and implementation of TQM.

2.20 Insufficient Resources for Quality Management Programs

Especially at the beginning of the programmes, the organization needs large amount of resources to train its personnel in quality related areas. Also, the new ways of doing things for the employees at their work place needs better measuring instruments and better machines. Indian industries give more importance on inspection rather that prevention. Deming's "Do it right the first time" hardly sees any place here. So the organization has to invest heavily, at least at the beginning in quality. This makes the whole programme getting abandoned sometimes due to lack of resources.

Often the committee involved in the Quality Management Programmes face the problem of inadequate resource while implementing the projects related to quality. They have to depend on the facilitating structure of the organization for resources, mainly because of the centralization in the enabling structure. Projects undertaken by different cross-functional groups are often delayed for shortage of resources and if the requirement is high, it may not get approved by top management at all [Matherly and Laster, 1992].

At the beginning, lack of trained facilitators in statistics and teamwork causes many of the teams to get off a rocky start. Some departments go forward while others are standing still. This causes unnecessary delay in the programme and if resources are not made available at the right moment, the programmes see its immature death.

2.21 Use of Pre-Packaged programme

In 1969, Wickham Skinner challenged that there was one best way to manufacture in his now-classic HBR article. "Manufacturing – Missing Link in Corporate Strategy" [May-June, 1994]. The kernel of this argument was that:

- Companies have different strengths and weaknesses and can choose to differentiate themselves from their competitors in different ways.
- Similarly, different production systems, the composite of decisions in a number of key decision areas, have different operating characteristics; and therefore, rather than adopting an industry-standard production system.

- The "task" for a company's manufacturing organization is to configure a production system that, through a series of interrelated and internally consistent choices, reflects the priorities and trade-offs implicit in its competitive situation and strategy.

These principles apply to the area of Quality management as well. Rather the variation is greater between industries when it comes to quality. Every organization has its own set of environment and customers, though the common environment like the Government regulations apply to all industries as well. So the system used by an organization to implement its quality system may not prove as appropriate to others. As Skinner puts it, "Two companies may adopt similar strategies and quality systems, but one can end up being far more successful only due to the environment in which it operates".

In India, most of the companies use the standard package of programmes available for Quality Management. Programmes like Quality Circle are a great success in Japan where as in India they are not upto the mark. This is because the companies adopting the programme don't think it necessary to introduce relevant changes or modifications in it keeping in mind the specific context of the organization and its environment. The supervisor-employee relationship in Japan is quite different than it is in India. If they choose their supervisor as the leader of Quality Circle, there is no reason for us to adopt the same. These points when are not taken care of result in failure of the programmes.

2.22 Implementation Problems Identified

The present review focused on such issues that considerably hindered the process of QMP implementation, but were inherent to each one of the programmes. These problems are the result of organizational conflict resulting from the process of organizational change brought about by the QMPs. The following are the significant problems as emerged from the literature review:

- In any organization, the top management's unwillingness or inability to invest the time and resource to get to know what the customers needs and expects results in failure of the quality management programmes. They fail to carry out their primary responsibility which is to provide enough financial support and adequate resources for building a successful QM system.

- The primary requirement for success of any quality program is availability of adequate resources at the opportune time to push the quality related projects ahead. Lack of resource or delayed resource availability inevitably delays the implementation program significantly and in some cases causes failure of the program as the essence of the program gets lost due to delay.

- A broad and clear quality vision and mission of the organization is what motivates the employees to achieve. But in most of the cases, the organizations resort to specifying only the short-term goals without thinking of the consequences that it can have in long-term. These goals sometimes act counter-productive in long run.

- The quality policies are made keeping in mind the long-term vision of the organization. When the vision is blurred, there is no way the quality policies can be made consistent with the vision. The objectives keep changing frequently making the approach towards quality policies inconsistent.

- If any employee at the lowest level of the organization comes under two QM systems running simultaneously with wide difference in their principles, confusion is bound to occur to him/her regarding which method to adopt at work. Even employees at the management level at times are confused because of large number of quality management systems running simultaneously in the company.

- Measurement acts as a trigger to improvement. If the organization cannot measure what it is achieving properly, it cannot set goals and the quality management system suffers a set back. Inability to measure the processes, their yield and performance causes the failure of QM systems.

- As the literature says, the companies sometimes give more stress on the quantity of the product/service rather than it's quality even if the quality programmes are at place. It makes the company to bear the cost of scrap/rework in addition to that the employees are demotivated and the basic objectives of the QMPs are lost.

- There is no reason as to why a company should directly follow the principles of a QM system as used by other companies. The set of conditions defining an organization is distinct as opposed to another organization even in the same location and field. Success of

one industry in a Quality System with its own set of variables may not apply to another industry at all. So the company suffers when it tries to implement the QMPs as it is existing in other organizations.

- In any hierarchical organization, the enabling structure made to drive the QMPs itself is highly centralized. When a decision is taken in the committees and teams that constitute the enabling structure it has to move through the hierarchy in the enabling structure and sometimes in the main structure of the organization before it is really approved for implementation. Centralized decision making in the enabling structure often delays the whole process of implementing the quality projects.

- The greatest challenge for the management of any organization is to change the attitude of the employees towards the new methods of doing work. Alignment of employee attitude with the principles of quality system keeps the organization in the fastest track to success.

- The employees have a fear that the shift to a quality system may act as a threat to their job security. Even the managerial staff sometimes resists the QMPs for the fear of empowering their subordinates.

- Employees usually don't have a sense of belongingness with their organization. The management of the organization or the employees themselves may be the person to be blamed for this. But this shows lack of commitment of employees. Sometimes the employees are also not confident about the QM system which leads to failure of the programmes.

- When the employees are given the freedom to take decisions on their job, they perform it well. This creates a sense of belongingness in them and they participate in the programmes as they think their voice will be heard. Lack of empowerment and participation always acts counter to successful implementation of QMPs.

- Most of the organizations never welcome teamwork in quality. A team always is a store of radical ideas which should be harnessed for problem solving. While some of the companies fail to use teamwork, some even don't bother to encourage.

- This is a major barrier again in a way that suggestions of one unit are never used by another to its advantage because of conflict among them. The company as a whole cannot proceed when the individual departments or units are lagging behind.

- "Whatever is cooking in the organization has to be communicated to each and everyone without any distortion," says a famous journal. Lack of internal communication systems often causes information not flowing upwards or downwards causing the management and employees to be unaware of problems of each other.

- If a department has already tried its hand at some programme and has become successful in implementing it, the other departments should try to share the experience so that they can progress and achieve faster. But this is not usually the case as the learnings at one corner of the organization never reach the other corner.

- Insufficient investment in training and inadequate technical training and education in QM is a commonly encountered problem although it is believed that a company's most valuable asset is it's personnel. The quality of a result will depend to a large extent on the training and retaining of the human asset.

- People's narrow vision of limiting QM to only a system of SPC causes difficulties in implementing the programme. The core concepts of QM systems are not clear to many in the organization causing the barrier to implementation.

- Management rarely have expertise in handling the problems or changes arising from implementation of QM system. This problem is more serious in service industries.

- Union leaders are generally made active partners in the implementation of QMPs. They are included in the committees and teams that steer the QMPs. They are sent for training programmes at the expense of the organization. As a result, a better relationship is established between union and management for smooth implementation of QMPs. But at the same time the union leaders use the QMPs as a part of their politics to pressurize management as during the period of wage negotiation.

- Appropriate rewards (which may be necessarily monetary) provide incentives for employees to participate in Quality improvement effort and also tangibly and visibly demonstrates top management's commitment. But most of the organizations in India are

still not clear as to which method of recognition to adopt to get maximum involvement from employees.

- The executives who initiate the QM programmes in the organization or are the flag bearers of the programmes often leave in the middle causing significant delay in the implementation process. This even sometimes results in termination of the programmes.

- Without an effective customer feedback system, which is the case in most of the companies, no one knows how one is performing. This is absolutely vital in building commitment and motivating one to constantly improve.

The present analysis enabled us to address above twenty-four issues that pose hurdles in the smooth implementation of the QMPs in any organization. At this stage of the research it was felt that an empirical investigation of these problems could provide us a better ground to understand these issues more deeply. Keeping this objective in mind, in the next phase of the research, an instrument was developed for empirical investigation of the problems. The process of developing the instrument and the methodology adopted during the empirical investigation are presented in the next chapter of this report.

FRAMEWORK AND METHODOLOGY OF RESEARCH

3.1 Framework of Research

The review of literature conducted as the first phase of research enabled us to identify twenty-four problems confronted by the managers while implementing and managing the QMPs. The pilot study provided us a deep insight of the actual practices in an organization implementing QMPs. At the same time literature provided the conceptual input to identify the problems of implementation as a result of organizational conflict brought about by the change programmes. During the study it was found that though the problems of QMP implementation are similar, the perception of the problems vary with level of management as well as from organization to organization. The organizations where the case studies were conducted had background different from one another and had different style of managing the programmes. So it is highly relevant to investigate the effect of these contextual factors on the problems of implementation. In addition, it is also important for the researcher to see whether the problems really have any impact on the outcomes of the programmes, as perceived by the managers.

The framework for further investigation into the problems can be represented by the model for the purpose of clear understanding (refer Figure 3.1). The present study has been carried out step by step according to this framework. In the first stage, the pilot study and review of literature helped us to identify the barriers of QM implementation. These problems are analyzed in the second stage for significant differences between manufacturing and service industry as per our research objective discussed in section 1.3. Third phase of the research intended to club the problems into some number of composite factors in order to reduce the data significantly. These composite factors are then analyzed for significant differences with respect to the contextual variables level of management, organization context and managerial approach discussed in the following section. The effects of these composite factors are also analyzed on the outcome of the programmes. Next section discusses the contextual variables that are used in this research.

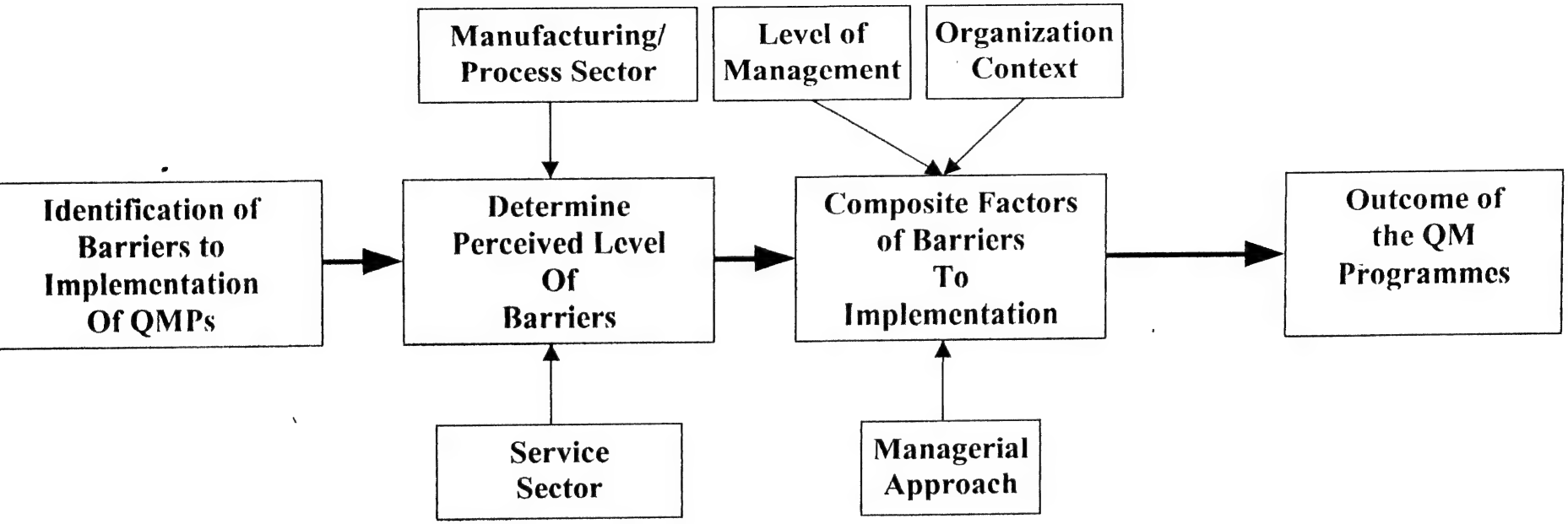


Figure 3.1: Research Framework

3.2 Level of Management

It was observed from the literature that the functions of different level of management in the implementation process are different [Dutta, 1999 and Elgamal, 1998]. The top managers act as members of the top management committee for the implementation of the programmes as a part of the enabling structure and exhibit their commitment to the programmes by setting goals and reviewing the progress of the programmes. Middle managers are involved in the steering committees and the quality councils to act as facilitators to a number of teams and quality circles. The lower managers act as facilitator as well as team leaders to the assigned team working under them. This wide variation of the activities among the managers involved in the implementation process actually made them understand some problems more closely than others. It was also observed that problems perceived by one level of managers as important may not be perceived so by other levels of managers. So it was one of our objective to observe how the perception of managers vary from level to level in the hierarchy of the organization.

3.3 Organizational Context

The review of literature in the previous chapter indicated that the age of an organization has some impact on the problems related to difficulty in sustaining employee participation. In older organizations workers are generally not interested in participation in the group activities. In addition, it also says that the size of the organization and the sector of operation has impact on the QM practices of the organization. Company size may positively influence the actual QM practices since large organizations tend to devote more resource to the organized quality programmes than small companies [Saraph et. al., 1996]. Companies sector of operation in the industry may be expected to influence the quality management, since the concepts of quality management have traditionally applied to manufacturing organizations and have recently began to influence other sectors of industry [Crossby, 1979; Sasser, Olsen and Wycoff, 1978]. Again some sector of industry may be forced to focus attention on quality management more in order to survive stringent customer requirement (such as those in defence industry) or demanding government product quality regulation (such as those in the drug industry) [Adam et. al., 1981]. So this was intended to use this study to compare manufacturing and service industry in particular. Deming has mentioned that it takes three to five years to fully implement QMPs in an organization. So it can be possible that the

problems we are addressing in this study are mostly confronted in the initial stage of implementation of the programmes. To investigate this, the age of the QMPs was also included as a contextual variable.

3.4 Approach of Management towards QMP Implementation

Participation of workers in the QMPs are voluntary in nature, as literature says [Udpa, 1992]. Our personal visit to some of the organizations during the pilot study revealed that some used to make the participation of workers compulsory to sustain their participation. A manager in an organization even went to the extent of saying Voluntary participation cannot take off in this country and in any country where western culture prevails. This further made us interested to explore whether this approach really pays with respect to the problems faced by organizations in the implementation phase. Literature also unequivocally preaches that union should be made partner of the change programmes like QMPs to ensure their support [Pike & Barnes,1996; Lawler III, 1997]. But our case studies revealed that involving union leaders in the enabling structure of the QMPs might give the opportunity for them to use the employee involvement programmes as a bargaining tool to pressurise management. So the effect of involvement or exclusion of union leaders in or from the enabling structure on the problems of implementation was also included in the agenda of empirical study.

Table 3.1 presents all the contextual variables included for empirical investigation

TABLE 3.4.1: Contextual Variables taken for study

Individual Managers	Organizational variables	Approach of Management
1. Level of Management	1. Industry Sector	1. Nature of participation
	2. Size of Organization	2. Union Involvement
	3. Age of organization	3. Benefits Given to Workers
	4. Age of QMPs	

3.5 Research Methodology

A wide range of research strategies are followed in social science:

- Experimental investigations
- Survey research methods based on questionnaire and interviews

- Manipulation of secondary data
- Historical studies and
- Case studies [Yin, 1984]

None of these methods are self sufficient from research point of view, each one of them having some inherent advantages and disadvantages. A more general approach of research with a view to develop a sound theory could consist of five steps

- Exploration
- Construct development
- Hypothesis generation
- Hypothesis testing for external validity
- Testing for internal validity

For theory development in the field of Quality Management, a research approach would require a forward outlook in which:

- Based upon literature in quality management, organizational behaviour, and general management theories, theoretical constructs of quality management are developed
- These theoretical constructs are empirically validated ;
- Theories about the interactive effect of those validated constructs on outcome measures of quality management are tested. [Ahire, 1996]

This research followed a similar approach, although, the primary objective of this research was not to judge QMPs, but to identify the problems confronted by the managers during QMPs implementation in an existing organization. During first phase of the research a pilot study was conducted to understand the problems of implementing QMPs in an actual organizational life in three organizations in Kanpur. At the same time relevant literature in the field of QM and organizational change was reviewed to get conceptual input from the researches in this field. In the second phase of the research, an empirical study was conducted through questionnaire survey mainly to see the significance of the problems identified in the first phase of the research and at the same time to observe the effect of different contextual factors on the problems. Questionnaire survey was conducted both by mailing questionnaire to different organizations and through personal visit to the organizations. The mail survey

method has the advantages like lower cost, reduction in biasing error, greater anonymity of the research, higher accessibility. It has also potential weaknesses like no opportunity for probe, no control over who fills the questionnaire and low response rate [Nachmias & Nachmias, 1995]. To avoid the discrepancies of mail survey, responses from organizations nearer to Kanpur, in and around Delhi, Noida and Gurgaon were collected by personal visits by the researcher. Constraints of both time and resource forced the researcher to collect responses from other places through mail. The advantage of electronic mail was also used to reach the people directly in less time.

3.6 Questionnaire Development

The initial draft of the questionnaire was built on the basis of the conceptual framework for the research. The questionnaire consists of four parts. Part A is made to collect data related to management level, organizational context and approach of the management towards implementing quality programmes. Part B of the questionnaire includes twenty-four statements intended to identify the problems confronted by management in the process of implementing QMPs. A three point likert scale ranging from `not at all a barrier' to `greatest barrier' (greatest barrier = 3, reasonably a barrier = 2, not at all a barrier = 1) was used to measure the perception of the respondents against each of these statements. Part C of the questionnaire includes sixty-nine statements intended to measure the problems confronted by management in the process of implementing QMPs. A five point likert scale ranging from `strongly agree' to `strongly disagree' (strongly agree = 5, agree = 4, undecided = 3, disagree = 2, strongly disagree = 1) was used to measure the perception of the respondents against each of these statements. Part D consists of statements to measure the perception on the outcome of the QMPs in terms of improvements achieved in eleven different aspects The items were directly taken from Asian Productivity Organization's survey report on their survey conducted to evaluate TQM practices in the Asia Pacific region. A five point likert scale ranging from `very high' to `very low' was used to measure each statements perceived importance (very high = 5, high = 4, moderate = 3, low = 2, very low = 1). An open-ended request for comment and suggestions of the managers on the QMP of the organizations and problems that they faced during the implementation process was also included at the end of the questionnaire. A four digit was used to code the questionnaire - first digit for the type of organization (manufacturing/process/service), second digit for the organization, third digit for

the level of management and the fourth digit for the serial number of the respondent in an organization.

3.6.1 Constructs of Implementation Problems

The variables in social science cannot be measured directly and hence require some items in a scale to measure them indirectly [Nachmias & Nachmias, 1985]. These latent variables are called constructs. In this research the constructs for the problems of implementing QMPs are identified from pilot study with sufficient conceptual input from literature of Quality Management and Organizational Change. The list of constructs taken for study is given below. These are derived from the pilot study and review of literature conducted in the first phase of research.

- Lack of Top management's commitment
- Insufficient resources for Quality Management Programmes
- No proper vision or mission for the quality management programs
- Short-term focus or inconsistent approach towards quality policies
- Conflicting quality goals because of large number of quality programs at place at the same time in the organization
- Underdeveloped quality standards
- More stress on 'Quantity' rather than 'Quality'
- Use of a pre-packaged quality program
- Centralized decision making in the enabling structure for QMPs
- Difficulty in changing employee attitude towards QMPs
- Fear or Resistance to change the way the employees do things
- Lack of commitment and confidence for QM from the employees
- Lack of empowerment and participation of the employees
- Inadequate use of teamwork for QMPs
- Inter-unit or inter-departmental conflict
- Ineffective internal communication systems
- Learning and experiences are not shared across QM programs
- Insufficient quality training and education for the employees
- Inadequate knowledge and understanding of quality management systems
- Lack of expertise in Quality Management in the company

- Lack of support from Union for the QMPs
- Lack of recognition and reward systems for employees in QMPs
- High turnover or changes in key executives associated with the QMPs
- Lack of customer feedback system

The individual items for the constructs are shown in part 'C' of the questionnaire in Appendix 'D'.

3.7 Sample Selection

The organizations were selected for conducting the questionnaire survey randomly from a list of companies supplied by the Associated Chambers of Commerce, New Delhi and from the CD-ROM by CII. The minimum criterion behind selection was to consider those organizations having ISO 9000/9001/9002/9003 certification, QS-9000 certification or SEI-CMM level certification (for software industry). The main reason behind this criterion was to ensure an active QMP at place already. Three organizations from Kanpur and six from Delhi, Noida and Gurgaon having active Quality Management Programmes of at least two years old were selected for collecting responses through personal visit by the researcher to the plants. The only reason behind selecting organizations from these sites was their geographical proximity to the Institute, that enabled researcher to conduct the survey in a considerably less duration. All these organizations were contacted over phone to fix up the interview schedule. Out of the twenty-six companies contacted in Delhi, Gurgaon and Noida, only six agreed to participate. In addition to these organizations two hundred and thirty other organizations spread all over India were selected for the survey by mailing questionnaires. All these organizations were considered to be among the best in the country for their QMPs [Business Today, 1996]. Unfortunately we could receive filled questionnaires only from 42 of such organizations. In addition, the mail lists of the organizations were obtained from the web and the CD-ROM supplied by CII to contact them over e-mail. Out of the 1567 e-mails made, only 56 responded. Appendix 'C' gives the entire list of the companies that participated in the survey along with their background information.

All the organizations selected for the survey are from Manufacturing, Process and Service industry. The Organizations have active QMPs of at least two years old and either have ISO 9000 certificate (or the series), QS-9000, SEI-CMM levels or are in a process of getting the certificate(s).

3.8 Respondent Selection

Respondents were selected in each of the organizations with the criteria to select only those managers who were directly involved in the process of QMP implementation in that organization. In other words, all the respondents were selected from the members of the committees and teams that constitute the enabling structure. The primary reason for this was to avoid any bias in the responses as well as to collect genuine responses. This criterion on the other hand limited the sample size in each of the organizations visited. Though the responses in the organizations were tried to be collected across all the functional departments, most of the responses collected were from production, R & D, HR and quality department. However, responses were collected from all the levels of management in a particular organization. A general profile of the responding organizations is shown in the Appendix 'C'. Number of respondents for some of the significant organizational variables which are taken for analysis in the nest phase of the research, are given below.

TABLE 3.8.1: Responses for different contextual variables (number of Organizations = 82 and number of respondents = 129)

Contextual Variables		
Employee Strength of	Smallest Organization	108
	Largest Organization	62,000
Age of	Youngest Organization	5 years
	Oldest Organization	96 years
Restructuring in organizations	Done after implementation	23
	Not done	59
QM Department	Present in organizations	36
	Not any functional department	46
Functional Union	Present in Organizations	43
	No union	39
Union leaders in QMPs *	Yes	26
	No	17
Financial Benefits for QM	Given to employees	54
	Not given in organizations	28
QM activities made	Compulsory	49
	Voluntary	33
Reasons for taking up QMP	Quality benefits for organization	37 %
	Meet customer demand	26 %
	Market advantage	21 %
	Part of larger strategy	10 %
	Requirement of EU	06 %
	Others	03 %

* Only the organizations having functional unions are taken for analysis

3.9 Empirical Validation of Construct

A thorough measurement analysis on instruments in empirical research is essential for several reasons. First, it provides confidence that the empirical findings accurately reflect the proposed constructs. Second, empirically validated scales can be used directly in other studies in the field for different populations. They also yield valid tools to practitioners for assessment in future [Flynn, Schroeder. Sakakibura, 1994]. A scale for a construct is useful for application by different researchers in different studies only if it is statistically reliable and valid.

3.9.1 Validity of Scale

The problem of validity arises because measurements in social science are always indirect. Under such circumstances, researchers are never completely certain that they are measuring the precise property they intended to measure [Nachmias & Nachmias, 1985]. Validity analysis is performed by using one or more of the following methods: content validity, convergent validity and discriminant validity.

An instrument has content validity if its items representatively sample the intended domain of concepts it is intended to measure. Convergent validity is the extent to which varying approaches to construct measurement yields the same results. A scale exhibits discriminant validity if its constituent items estimate only one construct. The scales must be tested for content validity before any further refinement. Inadequate content validity indicates that the items in an instrument do not properly measure the constructs and that any analysis conducted is meaningless. An instrument has content validity if its items representatively sample the intended domain of concept it is intended to measure. If the items corresponding to various constructs of an instrument are derived from comprehensive analysis of relevant literature, content validity can be ensured [Rossi, Wright, Anderson, 1983]. The discussions in the preceding chapters on the development of the constructs reflect relevance of the items to the constructs. Still, the initial draft of the questionnaire was given for content validity to three experts in the field of quality, one of them is a quality head in a local organization with 17 years of experience and other two persons are consultant of National Productivity Council, Kanpur. Before preparing the final draft of the questionnaire several iterations were made to incorporate the suggestions coming from the experts.

3.9.2 Exploratory Factor Analysis

The conventional approach to scale refinement consists of

- Identifying items relevant to the particular domain from literature
- Designing a survey instrument to measure these items
- Conducting a field survey
- Performing an exploratory factor analysis (often with varimax rotation) on the item responses to identify major factors according to items factor loading
- Refining the scale using Cronbach's scale reliability coefficient alpha.

Exploratory Factor Analysis (EFA) has major limitations. First, items are assigned to factors on which they load most significantly. However, an item may load, to considerable extent, on more than one factor, and thus, it may affect measurement of all the factors simultaneously. In other words the factors may not be distinct. Second, a factor may consist of items that correlate with one another only statistically. Their correlations can not be theoretically explained. When such items are forced into one factor, the factor may not have practical validity [Ahire. 1996].

Principal component analysis with varimax rotation reduced the 69 items into twenty-four factors. One of the items (item 5.1) that belongs to the construct 'conflicting quality goals because of large number of quality programs at place at the same time in the organization' was not loaded heavily into any of the factors. Remaining 68 items were heavily loaded to twenty-three distinct factors as shown in the Table 3.9.2.1 below.

The results in Table 3.9.2.1 show that the items that we have taken for study are valid and can be taken for further analysis. The table only shows the loading above 0.5. This test is to verify that the items represent the 24 factors or problems rather than to reduce the data. So during the test for factors using varimax rotation, the number of factors (24 in number) are entered as the constant rather than fixing the eigen values. The table shows only the loadings above 0.5. The 24 factors account for 78.39 % of total variance.

TABLE 3.9.2.1: Loading of the items on the 23 factors after PCA with varimax rotation (Factors 1 to 12)

Items	1	2	3	4	5	6	7	8	9	10	11	12
1.1	0.558											
1.2	0.624											
1.3	0.751											
2.1		0.654										
2.2		0.689										
2.3		0.895										
3.1			0.716									
3.2			0.821									
3.3			0.824									
4.1				0.639								
4.2				0.765								
5.1												
6.1						0.578						
6.2						0.634						
6.3						0.758						
7.1							0.666					
7.2							0.743					
8.1								0.563				
8.2								0.719				
8.3								0.821				
9.1									0.559			
9.2									0.747			
9.3									0.784			
10.1										0.595		
10.2										0.680		
10.3										0.700		
10.4										0.871		
11.1											0.664	
11.2											0.759	
12.1												0.565
12.2												0.664
12.3												0.711
12.4												0.827
12.5												0.873

TABLE 3.9.2.1 continued... (Factors 12 to 24)

Items	13	14	15	16	17	18	19	20	21	22	23	24
13.1	0.552											
13.2	0.648											
13.3	0.795											
14.1		0.511										
14.2		0.638										
14.3		0.824										
15.1			0.605									
15.2			0.683									
15.3			0.784									
16.1				0.561								
16.2				0.637								
16.3				0.682								
16.4				0.793								
17.1					0.663							
17.2					0.725							
18.1						0.524						
18.2						0.583						
18.3						0.686						
18.4						0.796						
19.1							0.762					
19.2							0.836					
20.1								0.577				
20.2								0.609				
20.3								0.716				
21.1									0.596			
21.2									0.631			
21.3									0.745			
22.1										0.628		
22.2										0.719		
22.3										0.848		
23.1											0.684	
23.2											0.757	
24.1												0.636
24.2												0.722
24.3												0.855

3.9.3 Reliability of Scale

Cronbach's alpha is a widely accepted measure of reliability. Typically a scale is said to be reliable if value of alpha is 0.6 or higher [Ahire, 1996]. The reliability tests for the scales were conducted using SPSS - X Release 3.0 for HP-UNIX. Cronbach's alpha for the constructs 'More stress on 'Quantity' rather than 'Quality' and 'Use of a pre-packaged

quality program' are found to be below .6, and hence were eliminated from the study. Table 3.9.2 presents the Cronbach' alpha for the constructs as calculated:

TABLE 3.9.3: Reliability of the constructs

Constructs for Problems related to QMPs Implementation	Cronbach's "α"
1. Lack of Top management's commitment	0.78
2. Insufficient resources for Quality Management Programmes	0.64
3. No proper vision or mission for the quality management programs	0.72
4. Short-term focus or inconsistent approach towards quality policies	0.61
5. Underdeveloped quality standards	0.66
6. More stress on 'Quantity' rather than 'Quality'	0.57
7. Use of a pre-packaged quality program	0.58
8. Centralized decision making in the enabling structure for QMPs	0.84
9. Difficulty in changing employee attitude towards QMPs	0.79
10. Fear or Resistance to change the way the employees do things	0.66
11. Lack of commitment and confidence for QM from the employees	0.73
12. Lack of empowerment and participation of the employees	0.64
13. Inadequate use of teamwork for QMPs	0.68
14. Inter-unit or inter-departmental conflict	0.71
15. Ineffective internal communication systems	0.76
16. Learning and experiences are not shared across QM programs	0.61
17. Insufficient quality training and education for the employees	0.67
18. Inadequate knowledge and understanding of QM systems	0.67
19. Lack of expertise in Quality Management in the company	0.73
20. Lack of support from Union for the QMPs	0.83
21. Lack of recognition and reward systems for employees in Quality Management Programmes	0.76
22. High turnover or changes in key executives associated with the Quality Management Programmes	0.69
23. Lack of customer feedback system	0.84

3.10 Choice of Statistical Procedure

The final objective of the research was to see how the problems of implementation are affected by various contextual factors. All the contextual factors chosen for this study were classificatory type. So the effect of the factors could be examined by dividing the responses into groups according to the contextual variables and observing whether the responses in the groups are significantly different or not. For the purpose of statistical analysis both parametric as well as non-parametric techniques are available. When alternative techniques are available it is necessary to employ some rationale for choosing the techniques [Seigel, 1958]. The considerations for the choice of a statistical test are: - power of the test, manner in

which the samples are drawn, the kind of measurement or scaling which was employed for measuring the variables. A parametric statistical test is most powerful when all the assumptions of the statistical model are met. F-test and t- test are widely used parametric statistical analysis methods. Both tests assume that the observation or scores in a sample should come from a normally distributed population. To avoid any assumption of normality in the sample, non-parametric tests were used in this research. For testing the significant differences among k independent samples, both extension of median test as well as K-W test can be used. When the data are such that either test might be used, K-W test is found to be more efficient because it uses more of the information in the observations. It converts the scores into ranks, whereas the extension of the median test converts them simply to either plus or minuses. Thus the K-W test preserves the magnitude of the scores more fully than does the extension of the median test. For this reason it is more sensitive to differences among the k samples of scores. The K-W test seems to be the most efficient of the non-parametric tests for k independent samples (Siegel, 1956). Therefore the K-W test is used in our analysis to see the difference among the groups. Other than this, mean scores for the problem variables are obtained to see the extent of the problems in different groups as well as in the organizations as a whole. A summary of the procedure involved in the K-W test is described below;

- All observations are ranked for k groups in a single series, ranks are assigned from 1 to N.
- Value R (the sum of ranks) for each of *K* groups is calculated.
- Statistics H is computed using the following equation :

$$H = \frac{12}{N(N+1)} \Sigma \frac{R^2}{n} - 3(N+1) \qquad \text{...Eq. 3.11.1}$$

Where,

N = Total number of ranks,

n = The number of ranks in a group,

R = The sum of the ranks in any column,

H = Statistics distributed as Chi square.

- If the probability associated with the observed value of H is equal to or less than the level of significance, H_0 is rejected in favour of H_1.

To see the significant differences between two independent groups "Mann-Whitney U test" was used. This is the one of the most powerful of the non-parametric tests, and it is a most useful alternatives to the parametric *t* test when assumptions of t test are not met (Siegel, 1956). For fairly large samples sizes n_1 and n_2, the value of U (test statistics) is determined by the following equations:

$$U = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1 \qquad \text{...Eq. 3.11.2}$$

$$U = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2 \qquad \text{...Eq. 3.11.3}$$

Where, R1 = sum of the ranks assigned to group whose sample size is n_1, and

R_2 = sum of the ranks assigned to group whose sample size is n_2.

For large samples (n_2 larger than 20) the sampling distribution of U rapidly approaches the normal distribution, with

$$\text{Mean} = \quad \mu_U = \frac{n_1 n_2}{2} \qquad \text{...Eq. 3.11.4}$$

$$\text{And. Standard Deviation} = \sigma_U = \sqrt{\frac{(n_1)(n_2)(n_1+n_2+1)}{12}} \qquad \text{...Eq 3.11.5}$$

That is, when $n_2 > 20$ we may determine the significance of an observed value U by,

$$z = \frac{U-\mu_U}{\sigma_U} = \frac{U - \frac{n_1 n_2}{2}}{\sqrt{\frac{(n_1)(n_2)(n_1+n_2+1)}{12}}} \qquad \text{...Eq. 4.11.6}$$

which is practically normally distributed with zero mean and unit variance(Siegel, 1956). The sign of z depends on whether U or U' ($U' = n_1 n_2 - U$) is used, but the value does not.

All tests were performed with SPSS 7.5 and STATISTICA for Windows using a significance level of .05. In the next chapter a detail report on the analysis of data is presented.

ANALYSIS OF DATA

4.1 Sample Analysis

Responses were collected from 82 organizations from manufacturing, process and service industries all over India. These organizations are distributed fairly all over the country. Manufacturing organizations topped the response list (fifty-one responses) followed by service industries (twenty-two responses) and process industries (nine responses). Out of fifty-one responding manufacturing organizations, twenty are from automobile sector and rest are from all other sectors. Out of twenty-two service organizations, twenty-one are from IT / Software industry. Out of 82 organizations, nine were covered through personal visit. Only thirty-nine organizations, out of the 274 organizations to which questionnaires were sent through mail, returned their responses. Through e-mail only thirty-four out of 413 organizations responded.

Organizations that participated in the survey started their QM activities at least two years back and either have an ISO 9000 / SEI - CMM certificate or are in the process of getting the certificate. The employee strength of the smallest organization was 108 and the largest was 62,000 (refer Table 3.8.1). There is also a wide variation in age of these organizations from 5 years to 92 years. 23 of the organizations have undergone restructuring to make the organizational structure flatter with subsequent reduction in the number of positions from CEO to the bottom most level. Thirty-six of the organizations created new QM department to monitor all quality management activities or reorganized the QA department to take extra responsibilities of Quality Management. Thirty-nine of the organizations do not have union and twenty-six of those which had unions, had union leaders in the committees and teams of the enabling structure. Fifty-four organizations reported that they give financial benefits (direct or indirect) to workers for their participation in different QM related activities. Most interestingly, forty-nine organizations reported to make their QM activities compulsory for all the workers. Each and every person who responded to the questionnaire said that they have received formal training in quality. Out of 129 respondents, excluding two members who are retired and running their own quality consultancy firms, others are active members of the QM movement in their respective organizations. Their membership vary from member of Quality

Council / Steering Committee . Quality Circle / Small Group Activity (SGA) / Task Force. Appendix 'C' presents a summary of the respondent organizations. 37 % of the respondents indicated that their organization took up quality management programmes for quality benefits to organization (e.g., higher production, reduced cost of production etc.) followed by 26 % saying it was to meet customer demand or expectation and 21 % saying it was to have a market advantage over competitors. For the rest 19 % of respondents, the QMP was taken up for reasons like part of larger strategy (10 %), requirement of European Union regulations (6 %) and for other reasons specific to their organization (3 %).

A total of 129 responses were taken for analysis after carefully going through the content. As responses were collected only from managers involved in the QMPs and most of the data were collected through mail, it was not possible to collect more than 4 samples from a single organization. In all the organizations where responses were collected personally, effort was made to have responses from all the levels of management. Out of 129 responses, forty-seven were collected from top managers, thirty-six were from middle managers and rest forty-six were from lower level managers. Though effort was made to collect responses from different functional departments, it was found later that most of our respondents were from R & D, HRD, production or quality department.

4.2 Respondents' Perceptions of the Potential Barriers

4.2.1 Overall Perception of the Respondents

As mentioned earlier, the purpose of conducting this survey was not only to identify the problems of QMPs implementation but also to see the critical interrelationship that exists between the problems and various contextual factors that can contribute towards the problems in any organization implementing the QMPs. Before drawing any demarcation between the problems with the external variables, it was felt necessary to observe the perception of the respondents as a whole on the problems of QMP implementation. The overall means and standard deviation of 69 items intended to measure the twenty-four problem constructs are presented in Table 4.2.1. Except items 7.1, 7.2, 8.1, 8.2, 8.3, other items have a mean score above 3 (in a 5-point scale) or equal to 3. All the items having a mean score above or equal to 3, indicate that majority of the respondents (more than 50%) agreed to the items and hence perceived the problems, intended to be measured by the statements, existed in their respective organizations. Items 7.1, 7.2, 8.1, 8.2, 8.3 representing the constructs 'more stress on quantity

rather than quality' and "use of a pre packaged program' have their mean close to 3 (2.99, 2.92, 2.88, 2.96, 2.89). But the problems intended to be measured by the statements are to be discarded straightway before further analysis, as they were not found to be reliable in our test for reliability of the constructs. Again, the items 22.1, 22.2, and 22.3 representing the construct 'lack of recognition and reward systems for employees in QMPs' also has mean less than 3 (2.89, 2.94, 2.97). But this construct was found to be reliable and hence is retained for further analysis (refer section 3.9.3, Table 3.9.3). The table showing the mean and standard deviation of the items is given below.

TABLE 4.2.1: Overall Mean and Standard Deviation of the Items (N = 129).

ITEMS	Mean	Std. Dev.
1.1 Top managers often find it difficult to attend quality related meetings and seminars due to their hectic schedule	3.47	0.86
1.2 Top managers rarely guide the teams working on quality related projects with necessary technical assistance they need from time to time	3.54	0.98
1.3 Top managers rarely come for help when a team working on a quality related project face trouble due to internal disputes among them	3.33	0.78
2.1 Obtaining resource for QMP's is a problem	3.61	1.08
2.2 Often quality related projects undertaken by teams & approved by steering committee are delayed due to lack of resource	3.52	0.96
2.3 Quality related projects requiring high resources are very difficult to get approved from top management committee	3.48	1.01
3.1 Quality goals of the company are not clearly defined	3.18	0.79
3.2 Employees are unaware of the direction to which this quality management program will take the company	3.34	0.87
3.3 The company has not established quality as a clear priority	3.61	0.54
4.1 Often short-term quality policies are made which are counter productive in the long run	3.33	0.76
4.2 Objectives of the QMPs keep changing frequently	3.06	0.71
5.1 Employees are confused regarding quality goals of the organization because of large number of quality projects running simultaneously	3.21	0.88
6.1 Standard measures of quality doesn't exist with all processes	3.24	0.62
6.2 There is frequent failure of the system because of quality related problems	3.12	0.59
6.3 Any type of failure in processes is not reported instantly before that goes to next stage for processing	3.01	0.81

7.1 Work quantity is given more importance than work quality	2.99	0.77
7.2 Rarely stress is given to reduce rework and material wastage	2.92	0.89
8.1 The company has not it's own definition of QM at place	2.88	0.71
8.2 The plans and policies of QM are made keeping in view the specific context of the company	2.96	0.83
8.3 The company follows a standard pre-packaged program of QM used by other companies as well	2.89	0.74
9.1 A decision taken by the steering committee is required to be approved by top management committee for QMP prior to its implementation	3.39	1.05
9.2 Often suggestions coming from the quality committees are sent to top management committee for its approval	3.76	0.94
9.3 Often steering committees and top management committee refer a decision related to quality to person or department outside these committees	3.43	0.98
10.1 Often it is difficult to implement new ways of doing things within the company	3.87	0.76
10.2 It is not simple to change employee attitude as per the requirements of the QM system	3.74	0.82
10.3 The change in employee behavior hasn't been conducive to continuous quality improvement	3.91	0.87
10.4 Management and non-management employees aren't willing to change their ways to improve performance	3.82	0.95
11.1 Both management and non-management employees rarely understand how change in their behaviour will affect them personally	3.57	0.59
11.2 Employees rarely think that change in work methods needed in QM will make their work redundant	3.49	0.68
12.1 Employees rarely understand the link between their jobs and the organizations' strategic plans and goals of QM	3.54	0.73
12.2 Employees rarely recognize and act on their responsibility to continuously improve their work processes	3.61	0.69
12.3 Employees aren't responsible for ensuring that services are at the quality level that customers expect	3.68	0.92
12.4 Employees rarely show confidence in the quality programs	3.71	0.86
12.5 Employees are not confident that successful work methods brought about by QMP's can change their work and environment	3.59	0.88
13.1 Employees are not empowered to take their own decisions at their work place for organizational improvement	3.33	1.09
13.2 Self-controlled, self-managed and self-directed work teams are not preferred in the organization in quality related projects	3.25	1.12
13.3 Employee participation has not increased since the beginning of QMPs	3.23	1.19
14.1 The organization rarely encourages collective projects in quality	3.11	0.96
14.2 The organization rarely expects that employees work as team in quality related projects	3.09	0.92
14.3 Cross-functional teams are more appropriate than single department teams in carrying out the quality projects	3.00	0.99

15.1 The QMP is not very well coordinated amongst different units and departments in the company	3.28	0.68
15.2 Inter-unit or inter-departmental battles cause great problems for the quality program	3.37	0.70
15.3 Innovations in quality related areas by a department are not used by others to their advantage	3.41	0.82
16.2 Cross-functional teams are rarely preferred in every work related to quality in the company	3.39	0.91
16.3 Resource libraries are not established for open information about QM to be shared by all employees of the organization	3.41	0.78
16.4 Communication channels doesn't exist up, down and sideways within the company	3.52	0.86
17.1 Steering committee for a QMP rarely uses the knowledge and experiences of other or previous steering committees in carrying out the quality related projects	3.46	0.97
17.2 Learning at one location in QM does not reach another location in the organization	3.32	0.82
18.1 Rarely employees of the organization are aware of the quality programs existing in the organization	3.26	0.93
18.2 A few management and non-management employees have received adequate formal training for quality.	3.43	1.10
18.3 Employees are rarely trained in QM for the skills they need to operate effectively in the changed environment	3.29	0.96
18.4 Both management and non-management employees attend quality seminars and workshops rarely	3.37	1.21
19.1 The core concept of QM is not clear to many employees in the organization	3.04	1.14
19.2 Problem solving techniques of QM are not clear to employees at large	3.12	0.99
20.1 Quality leaders in the organization doesn't have expertise in quality management	3.24	0.77
20.2 Top management of QM steering committee is rarely a source of new ideas for work development	3.18	0.83
20.3 Members of steering committee are rarely able to solve the quality related problems in the organization	3.32	0.94
21.1 Most of the union leaders rarely attend the meetings related to quality management	3.23	1.19
21.2 Union leaders rarely encourage workers to participate in the quality related group activities	3.07	1.06
21.3 Quality related group activities ae often stopped during labour problems	3.01	1.17
22.1 Performance in quality management is not tracked and reported at all levels	2.89	0.91
22.2 All employees in Quality Management are not recognized and rewarded for performance appropriately	2.94	0.87
22.3 Quality improvement accomplishments are not included in how an employee is rated and rewarded	2.97	0.60
23.1 The QM programs get delayed significantly due to change in key executive positions frequently	3.11	0.99

23.2 The essence of the program gets lost upon transfer of key executives	3.04	0.85
24.1 Customer satisfaction information (feedback and response) is not collected on a regular basis	3.81	1.24
24.2 Customer feedback is rarely used to change the way the work is done	3.62	1.07
24.3 Customer related information is rarely disseminated regularly to different departments	3.77	0.96

As mentioned earlier, all the 69 items were used to measure twenty-four problems confronted by managers during implementation of QMPs as identified in the first phase of our research with the help of pilot study in three organizations and literature review. Except the constructs, 'More stress on Quantity rather than Quality', 'Use of a pre packaged program' and 'Lack of recognition and reward system for employees in QM systems', other twenty-one problem constructs have mean above 3 (in a 5 point scale) indicating that majority of the respondents agreed with the statements included to measure the problems. This itself support our findings in the first phase of research, that managers implementing the QMPs often face these problems. Our belief is further supported by the fact that all the respondents in our sample are managers directly involved in the process of the QMPs in their organizations. Their perceptions cannot be taken as judgement passed from outside, but these are realization of the barriers through which the quality managers have to work while implementing the QMPs. Analysis also shows significantly high scores for the items 'difficulty in changing employee attitude towards QMPs' and 'lack of customer feedback system'. This indicates that almost all the respondents strongly agreed to these problems existing in their organizations. This further supports the fast that every organization faces problems in terms of changing attitude of employees towards QMPs and the problem at the same time is serious. Also, lack of appropriate customer feedback system plagues most of the industries and the employees hardly know about their performance as it affects the customer satisfaction.

4.2.2 Difference in Perceived Values between Manufacturing and Service Industry

Adequate data from both manufacturing and service industries helped us to carry out this stage of research which is to find out the difference in perception between manufacturing and service industries regarding the barriers to QM implementation. Total number of respondents from manufacturing sector were 75 (51 organizations) where as for service sector it was 38 (22 organizations). The perceived values are calculated taking the mean and standard

deviation of the constructs as above using the data from part B of the questionnaire. This is presented in the table below.

TABLE 4.2.2: Component Mean and S.D for Manufacturing and Service Industry

ITEMS	Manufacturing		Service	
	Mean	Std.Dev	Mean	Std.Dev
1. Lack of Top management's commitment	2.48	0.276	2.30	0.685
2. Insufficient resources for Quality Management Programmes	2.36	0.373	1.99	0.903
3. No proper vision or mission for the QMPs	2.06	0.385	2.23	0.815
4. Inconsistent approach towards quality policies	2.06	0.764	2.21	0.765
5. Conflicting quality goals in the organization	2.00	0.879	1.87	0.843
6. Underdeveloped quality standards	1.87	0.559	2.35	0.617
7. More stress on 'Quantity' rather than 'Quality'	1.92	0.682	1.67	0.854
8. Use of a pre-packaged quality program	2.01	0.697	2.07	0.681
9. Centralized decision making in the enabling structure	2.33	0.861	2.11	0.644
10. Difficulty in changing employee attitude towards QMPs	2.54	0.726	2.64	0.846
11. Fear or Resistance to change the way the employees do things	2.44	0.649	2.19	0.654
12. Lack of commitment and confidence from the employees	2.40	0.686	2.61	0.654
13. Lack of empowerment and participation of the employees	2.31	0.517	2.20	0.543
14. Inadequate use of teamwork for QMPs	2.01	0.734	2.26	0.772
15. Inter-unit or inter-departmental conflict	2.29	0.771	2.09	0.813
16. Ineffective internal communication systems	2.27	0.816	2.04	0.745
17. Learning and experiences are not shared across QM programs	2.24	0.682	2.13	0.751
18. Insufficient quality training and education for the employees	2.11	0.854	2.40	0.693
19. Inadequate knowledge and understanding of QM systems	2.08	0.901	2.55	0.559
20. Lack of expertise in Quality Management in the company	2.17	0.911	2.58	0.772
21. Lack of support from Union for the QMPs	2.23	0.872	1.21	0.518
22. Lack of recognition and reward systems for employees	2.19	0.798	2.00	0.774
23. High turnover of key executives associated with the QMPs	2.00	0.861	2.51	0.868
24. Lack of customer feedback system	2.39	0.839	2.46	0.922

The data above clearly shows the difference between the perceived values between manufacturing and service sector. A mean of 2 or above (in three point scale) shows that the item is perceived as a barrier. Since the perception of barriers is found to differ between manufacturing and service industries. an attempt is made to further analyze this phenomenon. We are required to investigate whether quality practitioners in service industry and those in manufacturing industry were significantly different in their perceptions on various quality barriers. So we test the following hypothesis.

Null hypothesis 'H_0': there is no significant difference in the perceived values to QM implementation between quality practitioners in service and manufacturing industry.

Alternative hypothesis 'H_1': on average the perceived barrier values of quality practitioners in service industry are greater than those in manufacturing industry.

Since the survey data are in ordinal scale, non-parametric tests are more appropriate for testing the hypothesis as discussed in the section 3.11. The non-parametric Wilcoxon Signed – Rank test is used to examine the difference in perceptions of these attributes. The results of the test are shown in the table below.

TABLE 4.2.3: Significance Levels for Wilcoxon Signed-Rank test

Quality Barriers' attributes	**One – tailed test (Z – Value)**	**Significance at $\alpha = 0.05$ (Prob > |Z|)**
Expertise in QM	- 3.141	0.0009
Quality training and Education	- 2.473	0.0068
High turnover of key executives	- 2.394	0.0084
Inadequate knowledge & understanding of QM	- 1.877	0.0300
Underdeveloped measurements	- 1.874	0.0307

As shown in the table, at 95 % significance level. crucial results are found in the attributes showing the differences in perception between manufacturing and service industry. The maximum difference on perception is observed with the attribute 'Lack of expertise in QM'. The score of this difference is most significant among the others. So we concluded that the perceived barrier values in the service sector are higher than those in the manufacturing sector for the above-mentioned attributes at a significance level of 0.05. A plausible

explanation could be that quality management in manufacturing industry are generally more well established than in the service industry (Fox, 1993). A close look into the components in Table 4.2.3 indicates that these represent the extent to which the QMP is established in the service industry. As it is believed, the QMPs started from manufacturing organizations and is much more developed with large number of processes need to be standardized and improved unlike service industries. It may be the reason for more knowledge of the employees about QMPs when compared to the service industry where the term 'Quality' has recently become a corporate buzzword with more and more organizations opting for a viable QMP for their kind of setup. Again, a look at the programmes show that most of them are designed keeping in mind the manufacturing organizations where as there is no such restriction for its use in service industry. This all may be the reason for the service organizations' perceiving the quality barrier attributes to a significantly greater extent.

In continuation, another test is carried out to find out significant difference between the above said industries in the following hypothesis.

Null hypothesis 'H_0': there is no significant difference in the perceived values to QM implementation between quality practitioners in service and manufacturing industry.

Alternative hypothesis 'H_1': on average the perceived barrier values of quality practitioners in manufacturing industry are greater than those in service industry

The non-parametric Wilcoxon Signed – Rank test is used to examine the difference in perceptions of these attributes. The results of the test are shown in the table below.

TABLE 4.2.4: Significance Levels for Wilcoxon Signed-Rank test

Quality Barriers' attributes	**One – tailed test (Z – Value)**	**Significance at $\alpha = 0.05$ (Prob > |Z|)**
Insufficient resources for QMPs	- 2.435	0.0075
Lack of top management commitment	- 2.653	0.0040
Difficulty in changing employee attitude	- 3.031	0.0012
Inter – departmental conflict	- 2.332	0.0099
Lack of customer feedback system	- 1.938	0.0268

At 95 % significance level, crucial results are found for manufacturing organizations which are significantly different. The maximum difference on perception is observed with the attribute 'Lack of expertise in QM'. The score of this difference is most significant among the others. So we concluded that the perceived barrier values in the manufacturing sector are higher than those in the service sector for the above-mentioned attributes at a significance level of 0.05. The items which are significantly higher between the two industries reflect the inherent problems in the manufacturing organizations. Large number of departments in a manufacturing organization may be the reason for inter-unit conflict. Again, since these organizations have a relatively larger and uneducated work force, it is a challenge for the management to change the attitude of the employees towards the QMPs conducive to the programmes. Recent trends in manufacturing sector have shown a sharp decline in profits and a problem of resources to sustain the ongoing functional activities of the organization. Since the QMPs are unable to deliver tangible results, it suffers the most during resource crunch period in the organization. This also may be the reason for lack of top management commitment towards the programmes.

4.3 Composite Factors of Barriers to Implementation of QMPs

A principal component analysis is applied to determine whether the attributes of barriers could be grouped in some meaningful way or the data could be conveniently reduced. In essence, a PCA looks for a few linear combinations of the original variables that can be used to summarize a data set, losing in the process as little information as possible (Everitt and Dunn, 1991). In this study, a PCA using a varimax rotation is used to examine the number of dimensions to which the attributes can be grouped. The results of the rotation are shown in the table below. The Table 4.3.1 gives the items, their loadings, the eigen value for each factor and the percentage of variance for which the factor accounts.

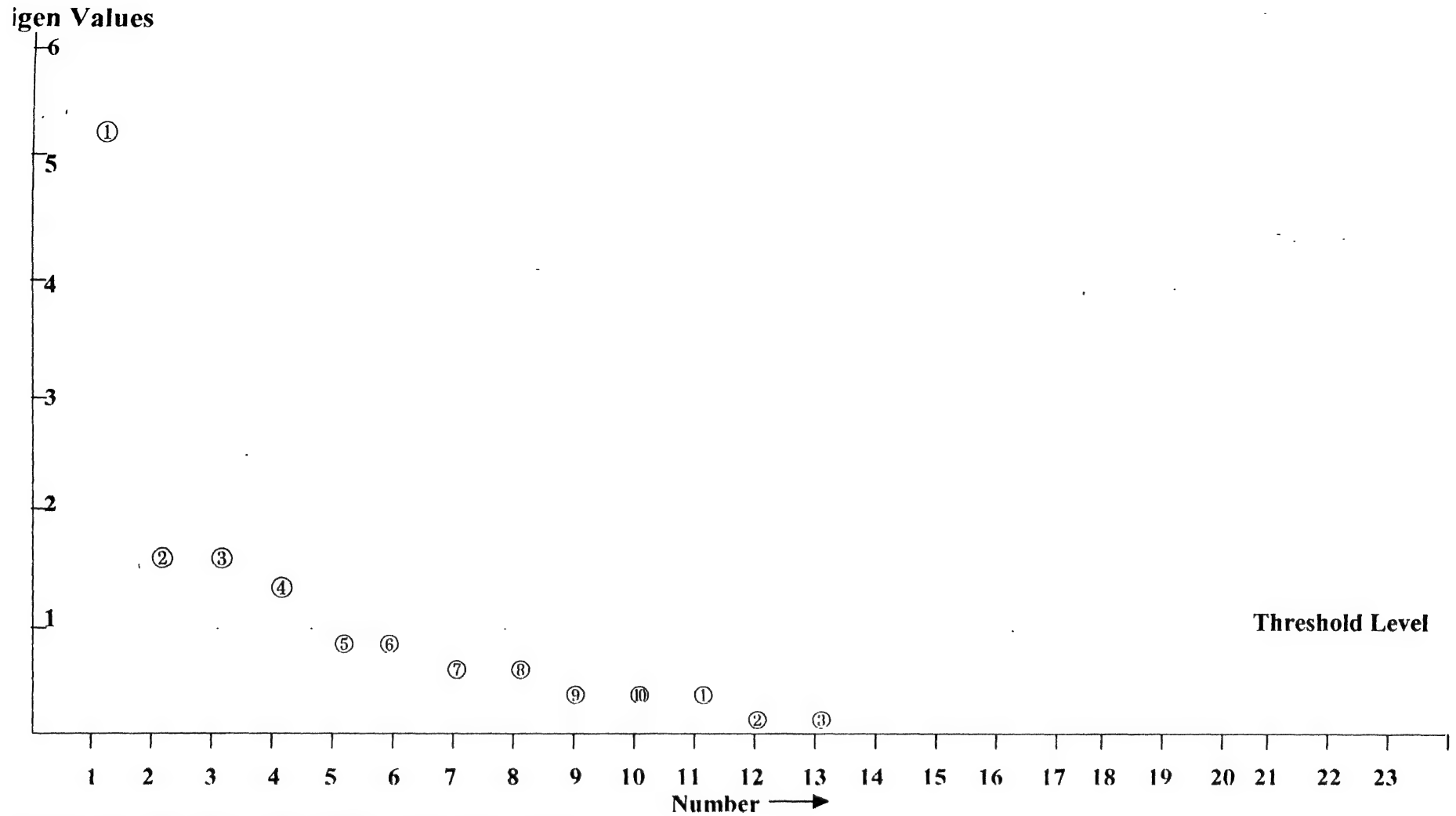
The results in table show a four-factor solution. The eigen values clearly show that four common factors are present and it is confirmed by the fact that an "elbow" appears at the fourth factor (refer figure 4.3.1), which indicates that further data extraction would not add substantially to the cumulative variance explained by the four-factor solution. This being the case, the four-factor solution appears to be acceptable. These dimensions are seen to account for 79.30 % of total variance.

TABLE 4.3.1: Loading of the components on the four factors after PCA

Composite Factor name	Factor 1	Factor 2	Factor 3	Factor 4
1. Lack of Top management's commitment	0.85996			
2. Centralized decision making in the enabling structure for QMPs	0.82312			
3. No proper vision or mission for QMPs	0.80873			
4. Short-term focus towards quality policies	0.79264			
5. High turnover of key executives associated with the QMPs	0.58699			
6. Lack of expertise in Quality Management in the company	0.51811			
7. Difficulty in changing employee attitude towards QMPs		0.60163		
8. Fear or Resistance to change the way the employees do things		0.63276		
9. Lack of commitment and confidence for QM from the employees		0.73772		
10. Lack of empowerment and participation of the employees		0.83488		
11. Inadequate knowledge and understanding of QM systems		0.84031		
12. Inadequate use of teamwork for QMPs			0.83495	
13. Inter-unit or inter-departmental conflict			0.81279	
14. Ineffective internal communication systems			0.76418	
15. Learning and experiences are not shared across QM programs			0.72134	
16. Lack of support from Union for the QMPs			0.63331	
17. Lack of customer feedback system				0.66367
18. Insufficient quality training and education for the employees				0.59144
19. Lack of recognition and reward systems for employees in QMPs				0.51884
20. Insufficient resources for QMPs				0.55218
21. Conflicting quality goals				0.61237
22. Underdeveloped quality standards				0.73647
Value **Variance Explained**	**5.8031** **49.5 %**	**1.4651** **59.7 %**	**1.3711** **68.6 %**	**1.2537** **79.3 %**

* Only loadings of value > 0.5 are shown

** Total Variance explained by the four factors = 79.3 %



Only factors with eigen values greater than 1 are retained

Figure – 4.3.1 Scree Plot of Eigen Values

The underlying dimensions are made up of the following.

Factor 1: Labeled as "***Management Barrier***" as the components seem to focus more on the predicament that are caused due to inept management in the organization. Choice of an appropriate programme for the organization as well as the goals of the programme also are set by the management. So we can say success of the programmes or the problems faced during the implementation process are solely dependent on the proper planning of the programmes by the management keeping in mind the specificity of the organization as opposed to other organizations.

Factor 2: Labeled as "***Employee Barrier***" as the sub-factors show the difficulties that are more associated with the employee related problems in the organization. An organization which is unable to change the employee attitude conducive to the programmes, will not succeed in the implementation process. Lack of commitment and participation from employees for the programmes also cause a lot of problem during the implementation process. The processes get delayed significantly due to this.

Factor 3: Labeled as "***Organizational Barrier***" as the items seem to be inherent in the functioning of the organizations. This composite factor of barrier deals with the issues pertaining to the functional aspects of the organization mostly related to the inter-personal relationships. The organizations with improper communication networks, inter-unit conflict etc. always face problems during the implementation process. If at all they are successful, they take considerable amount of time to achieve this and are unable to sustain the programmes for long.

Factor 4: Labeled as "***Systemic Barrier***" as the components team up with the problems that can be attributed to the whole organizational system or set-up. This composite factor deals with the issues pertaining to the operating characteristics of the organization. It focuses on the organizational system as it functions in the organization.

4.4 Composite Factors of Barriers to Implementation and Contextual Variables

It was mentioned in the first chapter that our objective of the study is not only to identify the problems confronted during implementation of QMPs but also to see the effect of various

contextual variables on the problems (ref. section 1.3). This section attempts mainly to identify the problems that are affected by a particular contextual variable. The problems of implementation of QMPs are tested for significance with respect to different contextual variables as identified in the sections 3.1, 3.2 and 3.3. Responses are divided into groups according to the contextual variables and are shown in Table 4.4.1 below.

TABLE 4.4.1: Number of respondents for each sub-group of contextual variable

Contextual Variable	Sub-Groups	Number of Respondents
Level of Management	Top	47
	Middle	36
	Lower	46
Age of organization	New (≤15 years)	53
	Old (> 15 years)	76
Size of Organization	Medium (≤ 1000 employees)	60
	Large (> 1000 employees)	69
Age of QMPs	New (≤5 years)	43
	Old (> 5 years)	86
Union Involvement *	No	29
	Yes	43
Benefits Given (for participation in QM)	No	50
	Yes	79
Nature of Participation	Voluntary	60
	Compulsory	69
Presence of QM department	No	81
	Yes	48

* The organizations having union are only taken for study (Total 72 responses)

Except the factor, industry sector- Manufacturing and Service which are already discussed above for significant differences, all other contextual factors have shown some interrelationship with one or more of the composite factors of *barriers to implementation* of QMPs and are discussed in the section below.

4.4.1 Managerial Barrier:

This factor takes into account the following components.

- Lack of top management commitment
- Centralized decision making in the enabling structure for QMPs
- No proper vision or mission for QMPs

- Short-term focus towards quality policies
- High turnover of key executives associated with QMPs
- Lack of expertise in QM in the company

K-W and Mann – Whitney U test results are shown in the Table 4.4.1.1 which indicate that this factor is significantly different by age of organization, age of QMP and presence of QM department.

TABLE 4.4.1.1: K-W and Mann-Whitney test results for Management Barrier

Contextual Variable	Groups	Mean Rank	Sum of Rank (H)	U (d.o.f.)	Significance
Level of Management (K-W test)	Top Middle Lower	64.99 83.46 77.81	(6.47)	(2)	0.035
Age of QMP	New Old	61.77 78.21	2656.1 6726.1	1358	0.0080
Presence of QM department	Yes No	67.93 74.45	3260.64 6030.50	1379	0.003

Further discussion about the relationship is given below.

4.4.1.1 *Level of Management*:

K–W test for the significant difference between the perceptions of these groups yielded interesting results. Middle managers perceived the problems to a greater degree than the other two groups (Table 4.4.1.1). This is very natural in any organization because the middle management is mostly involved in guiding and co-ordinating the projects related to quality management. They have to document each and every process which are intended to measure the quality improvement. All this makes them to suffer most from the incompetent top management during leading and co-ordinating cross-functional projects. Top managers' work is mostly confined to initiating and planning a program and hence any slack shown at this level is translated further down in the organization. This is very interesting that though the top managers' perceptions ranked lowest in the group, they also perceived this factor as a barrier to implementation. Mean scores of individual items that constitute the factor for each of the level of management is shown in Table 4.4.1.2.

TABLE 4.4.1.2: Mean and Standard Deviations of items significant by level of management

Problems	Category	Top	Middle	Lower
Lack of top management commitment.	Mean (Std. Dev.)	2.662 (0.721)	3.896 (0.734)	3.051 (0.729)
No proper vision or mission for QMPs	Mean (Std. Dev.)	3.001 (0.672)	3.555 (0.733)	3.366 (0.701)
Centralized Decision making in the enabling structure for QMPs	Mean (Std. Dev.)	2.938 (0.665)	3.454 (0.721)	3.528 (0.779)
Lack of expertise in QM	Mean (Std. Dev.)	2.814 (0.701)	3.356 (0.776)	3.972 (0.871)
High turnover of key executives associated with QMPs	Mean (Std. Dev.)	2.156 (0.603)	3.804 (0.795)	2.696 (0.682)

Further analysis of individual items yields the following results.

- As perceived by middle managers, both in manufacturing as well as service organizations, top managers are not committed to the QMPs (Table 4.4.1.2). The latter can express their willingness by devoting their time and simultaneously making it sure that sufficient resource is made available to the programme at the appropriate moment. Also, since the programmes are pioneered by the top managers, they should help the teams working on the projects with their ideas in case they face problems. But in fact, they are found to back track in these crucial issues. They rarely attend the quality related meetings and seminars and rarely come for rescue when a team working on quality project faces trouble due to internal disputes among the departments involved in the project as is evident from the test results shown in Table A.1 in Appendix 4.1.

- A hi-tech QMP without proper vision and mission lands the company in trouble in long run. This is also true for organization where the broad vision of quality is not aligned with the larger goals of the company. The middle mangers are the first in the organization at the receiving end of the results shown by the QMPs and hence can perceive the problems of improper vision better than the other two groups. The test results also show the same (Table 4.4.1.2). Most of the middle managers agreed to the fact that quality has not been established as a top priority in their organizations and employees at large are not aware of the direction to which the QMP will drive the company (Table A.1 in Appendix 4.1).

- The problem of high turnover of key people associated with the QMPs in the organization is found to be more prominent with the lower managers of service organizations (Table

4.4.1.2 *Age of QMPs*

Mann – Whitney U test for the significant difference between the perceptions of these groups yielded interesting results. On an average, old QMPs found the managerial barrier as a greater threat towards the implementation process rather than new QMPs (Table 4.4.1.1). An explanation to this in a broader perspective can be that though management starts the programmes with lot of enthusiasm, but gradually loses interest in it. This can be due to lack of commitment on the part of the top management or any of the items intended to measure this barrier. Though the components 'short-term focus towards quality policies', 'centralized decision making in the enabling structure for QMPs' and 'lack of expertise in QM' show high mean scores for newer QMPs, but the comparable mean scores for older QMPs also show that the latter is not free from it. So when analyzed as a single factor, the older QMPs prove to be a greater problem for managerial barrier. Mean scores of individual items that constitute the factor for new and old QMPs is shown in Table 4.4.1.3.

TABLE 4.4.1.3: Mean and Standard Deviations of items significant by age of QMP

Problems	Category	New	Old
Lack of top management commitment	Mean	3.010	3.847
	(Std. Dev.)	0.967	0.655
Short-term focus or inconsistent approach towards quality policies	Mean	3.627	3.035
	(Std. Dev.)	0.719	0.845
Centralized decision making in the enabling structure	Mean	3.738	3.343
	(Std. Dev.)	0.696	0.810
Lack of expertise in QM	Mean	3.892	3.286
	(Std. Dev.)	0.623	0.811
High turnover of key executives	Mean	3.154	3.503
	(Std. Dev.)	0.752	0.524

Further analysis of the items is given below.

- Older QMP's perception on the construct 'lack of commitment from top management' is found to be significantly higher among the two groups (Table 4.4.1.3). The reason behind this can be attributed to the fact that the management starts the programmes with much enthusiasm but is unable to give sufficient attention in due course. They either lose interest in the programmes because of their impatience as these programmes take at least 3–4 years to show results (Ahire *et al*, 1996). Another reason can be that they start focussing on new and more viable programmes time and again with changing market

needs and customer expectations and forget the older programmes completely. Such changes demoralize the workers and it gradually becomes difficult for management to sustain workers participation. A third reason for the above may be that in older QMPs, the employees at lower level take part in the improvement activities with their supervisors as facilitators or team leaders. It rarely involves top managers directly in the projects. So the top managers may look at the whole process as a challenge to their existing role of 'control and command' and start withdrawing from the programmes.

- The problem, centralized decision making in the enabling structure is significantly different by age of the QMPs. The problem is more prominent in the new QMPs than the old ones as shown by the test results (refer Table 4.4.1.3). One major reason behind this problem is the bureaucratic style of decision making in the enabling structure. The steering committees and the other committees in the enabling structure have the drawback that they cannot take decisions autonomously. Often decisions taken in these committees are sent to top management committee for the final approval and sometimes to other functional departments as well. The committees' role in the whole implementation process is advisory or facilitatory in nature without any executive power. This limits the effectiveness of the enabling structure in facilitating the teams working for quality improvement projects. Further analysis of the individual items under centralized decision making reveals that though all the items have mean score significantly more in the new QMPs, the old QMPs are also not free from the problems. The results also show that individual score of the items under this problem is significantly lower in the old QMPs (refer Table A.1 in Appendix 4.1). This indicates that in the course of time the committee and teams get some autonomy to take decisions at the lower level of the enabling structure. Still they do not get sufficient executive power to take decisions independently or to approve the suggestions coming from bottom.

- The results show that individual score of the item 'short–term focus or inconsistent approach towards quality policies' is significantly lower in older QMPs (refer Table 4.4.1.3). This clearly shows that in new QMPs, the management focuses on the short-term gains rather than long term achievement. This may be due to the pressure on the management to show results in quality. Intangible improvements are unable to lure the management and they run after the tangible gains for the organizations to sustain the programmes. So this makes the personnel involved in quality management to plan short-

term policies for the organization which may yield tangible results in near future. They also keep changing objectives frequently for the gains (refer Table A.1 in Appendix 4.1). Both of these cases act detrimental to the QMP of the organization in the long run. Though in older QMPs this problem is little less, but they are not completely free from it.

- High turnover rate of key executives associated with the QMPs in the organizations is found to be a greater problem for the older QMPs (refer Table 4.4.1.3). This is particularly true for service organizations. The reason for this can be that the older QMPs have usually more experienced people at its core who are aware of the complete implementation process in detail. So newer QMPs tend to attract them with better salaries and benefits along with high rank in their organizations in order to implement the programmes faster. This causes the implementation programmes to suffer in the left out organizations.

4.4.1.3 *Presence of QM Department*

It was one of the major interests of this research to observe how the presence of a functional department with the sole responsibility to implement the QMPs affect the problems of implementation. Mann–Whitney U test for the significant difference between the perceptions of these groups yielded interesting results. The respondents belonging to the organizations having no QM department perceived the managerial barrier to a greater extent than the organizations having a functional department for quality management (Table 4.4.1.1). Mean scores of individual items that constitute the factor for new and old QMPs is shown in Table 4.4.1.4 below.

TABLE 4.4.1.4: Mean and Standard Deviations of items significant by presence of QM deptt.

Problems	Category	Yes	No
Lack of top management commitment	Mean	2.981	3.616
	(Std. Dev.)	0.638	0.557
No Proper vision or mission for QMPs	Mean	3.446	3.962
	(Std. Dev.)	0.794	0.625
Short-term focus or inconsistent approach towards quality policies	Mean	3.028	3.868
	(Std. Dev.)	0.801	0.652
Centralized decision making in the enabling structure	Mean	3.288	3.851
	(Std. Dev.)	0.753	0.609
Lack of expertise in QM	Mean	3.068	3.441
	(Std. Dev.)	0.810	0.675

Further analyses of the items are presented below.

- Organizations with a functional department for quality found better commitment from top managers for QMPs (Table 4.4.1.4). The top managers paid due attention to the programmes and also took them seriously. This may be because they feel responsible to the departments and hence indirectly to the programmes. The greatest advantage of having a functional department to drive quality initiatives is that it tries to reinforce the QM activities into organization's functional activities. When QM activities are fully integrated with functional activities then there remains little possibility to look them as something added from outside [Yearout, 1996]. Top manager's more support to the QMP's in organizations where they are driven by a functional department may be because of this reason.

- Respondents from organizations having a functional department to drive the QM initiatives also felt the effect of centralized decision making to a lesser extent (refer Table 4.4.1.4). A plausible reason for it can be given as follows. The enabling structure for the QM department runs parallel to the functional structure of the organization. Hence the personnel in the QM department enjoy the same authority and power as their counter parts in the functional structure. This makes them easier to implement the bottom up decisions from the workers level more efficiently without much delay. If the QM department is absent, the top management seems to neglect the QMPs. This also explains indirectly the lack of top management commitment in organizations without a functional department for quality management.

- The problems of vision and mission and short-term focus on quality policies also found to be more associated with organizations without a functional QM department (Table 4.4.1.4). The reason for this can be as follows. The QM department usually draws people from different functional units of the organization who are experts in their own areas. The QM programmes are taken up by these departments and vision and mission for the quality management programmes are also set by them. These people being aware of the quality needs of the organization, are able to define the broad quality policies better. This cross-functionality also allows them to set realistic goals in quality for the organization.

- Organizations without functional departments in QM face the problem of lack of expertise in QM to a greater extent (refer Table 4.4.1.4). The reason behind this can be

that in a department, all the work done by an individual is recognized and he/she feels a part of it. There is more chance that if the organization excels in quality, the persons involved with it will come to limelight. So such organizations retain experts with it. These experts continuously try to excel in their area by acquiring knowledge continuously and also help their organizations to set new trends in quality.

An overall picture of the managerial barrier shows that it consists of components which account for the greatest implementation problems and at the same time are controllable to some extent. Problems like top management commitment are mostly perceived by middle management who play a key role in implementation of any QMP. Continuation of this problem gradually frustrates the middle managers and this is reflected in their non co-operation to the programmes in due course of time. If this is taken for granted, there is no way that the programmes can see the light of success in the organization. Though the other contextual variable 'age of QMP' is beyond control, but still it is found that top management commitment is indirectly related to it. If the top managers are committed to the QMPs, they can solve each and every problem of the organization. Sustained top management commitment is the requirement of the present day QMPs. This can be further enhanced and ensured by a functional QM department in the organization. This component is found to explain most of the problems of managerial barrier to the implementation of QMPs and is also controllable. It can give the organization a well-defined quality goal and proper vision to proceed and excel in quality in form of drawing and retaining experts in the area of quality within it.

4.4.2 Organizational Barrier

This factor takes into account the following components.

- Inadequate use of teamwork for QMPs
- Inter-departmental conflict
- Ineffective internal communication systems
- Learning and experiences not shared across programmes
- Lack of support from union for the QMPs

The Mann – Whitney U test results as shown in Table 4.4.2.1 below indicate that this factor is significantly different by age of organization, size of organization and presence of QM department.

TABLE 4.4.2.1: Mann-Whitney test results for Organizational Barrier

Contextual Variable	Groups	Mean Rank	Sum of Rank	U	Significance
Age of the Organization	New Old	62.15 79.08	3293.9 6800.6	1550	0.013
Size of the Organization	Medium Large	63.92 81.65	3835.2 5633.8	1525	0.0051
Presence of QM department	Yes No	69.76 78.21	3348.50 6335.00	1554	0.0287

The components of this factor show that it deals with the items that are mostly related to the functional aspects of the organization like inter-personal relationship. It shows that organizations which are older and larger in size face the problems to a greater extent. This seems obvious as the older organizations with higher average age of employees generally are resistant to change programmes and their hesitation is reflected as problems that we are going to discuss. A larger work force always has the problem of unity and management finds it a hard task to communicate its ideas effectively between all of them. We already have discussed the advantages of a functional QM department in the previous section. Further analysis for the factors according to the contextual variables is as under.

4.4.2.1 *Age of Organization*

Mann-Whitney U test was performed to see the significant differences between the responses of the two groups. The analysis shows that the older organizations face this problem to a greater extent than the new organizations (Table 4.4.2.1). Mean scores of individual items that constitute the factor for new and old QMPs is shown in Table 4.4.2.2 below.

TABLE 4.4.2.2: Mean and Standard Deviations of items significant by age of organization

Problems	Category	New	Old
Inadequate use of teamwork for QMPs	Mean (Std. Dev.)	3.035 (0.845)	3.627 (0.719)
Inter-unit or inter-departmental conflict	Mean (Std. Dev.)	3.265 (0.817)	3.847 (0.700)
Ineffective internal communication systems	Mean (Std. Dev.)	3.001 (0.829)	3.667 (0.553)
Learning and experiences are not shared across QMPs	Mean (Std. Dev.)	3.008 (0.869)	3.667 (0.727)
Lack of support from Union for the QMPs	Mean (Std. Dev.)	3.010 (0.967)	3.847 (0.655)

Further explanation to the factors with respect to the age of organization is given below.

- Older organizations found inadequate use of teamwork for QMPs greater than newer organizations (Table 4.4.2.2). The reason behind this can be attributed to the fact that older organizations usually operate on traditional methods and values and believe in functioning as separate units rather than united. They usually have no dependency among units except in terms of output. So it becomes very difficult to pull people from different departments to work on quality related projects. Even sometimes the management of the organization discourages collective projects in quality. This may be because they think that deviating beyond the traditional operating rules of the organization will erode their weight in the organization. Also the factors like inter-unit conflict may not allow them to come together and work as one.

- In continuation to the above discussion, the older organizations also found the problem of inter-unit conflict to a greater extent than newer organizations (refer Table 4.4.2.2). The functional departments in an old organization are mostly familiar to working like an independent unit. On the other hand, the QMP related projects often need the involvement of different departments in their successful implementation. According to Deming, the successful implementation of the quality projects needs 'breaking the barriers' among the departments (Ahire *et al*, 1996). This itself is a Herculean task in an old organization where most of the employees work with the barriers of functional structure for most of their lives. Individual items show that the problem is significantly lower in newer organizations with all means less than 3 (in 5-point scale) as shown in Table A.2 in Appendix 4.1.

- The test results show that ineffective internal communication systems are more in older organizations (Table 4.4.2.2). The reason behind this may be that in older organizations with barriers between the functional units and levels, the communication of information is not proper. Though presence of informal communication networks cannot be denied but it seems they are confined within the departments and personal relationships. Formal reporting relationships which gives rise to formal communication networks also has its limitations in not being able to communicate every type of information within it. Again, unlike newer organizations, older ones rarely encourage multi-disciplined teams as found from our discussion above which does not allow direct contact between employees.

- Older organizations reported non sharing of learning and experiences across the QMPs more than newer ones (refer Table 4.4.2.2). This can be explained taking into account all the above three discussions. Older organizations rarely encourage multi-disciplined teams to work on quality projects. Teamwork is the heart of QMPs which brings multiple talents and ideas into the projects to operate effectively on the programes, which otherwise is impossible to achieve individually. They also help improve the communication between departments and different entities of the organization. If teamwork is not encouraged like in older organizations, the learnings and experiences of one unit running a QMP at a particular period gets confined to it forever and other departments hardly get any knowledge of it. Inter-unit conflict never allows them to keep a formal relationship for exchange of information.

- Older organizations implementing QMPs are found to get less support from union as shown by the test results (Table 4.4.2.2). This is because, over the years the workers are accustomed to operate in a traditional way and are never exposed to such programmes which try to change their work habits. These organizations with improper communication networks perhaps are unable to translate broad quality goals to the union leaders and in turn are not able to get their support.

4.4.2.2 *Size of Organization*

Mann Whitney U test was performed to see the significant differences in the responses between the two groups. The test results as given in Table 4.4.2.1 show that larger organizations perceived most of the components of organizational barrier to a greater degree. This shows that a larger work force has problems of conflict and ineffective communication inherent in it. Mean scores of individual items that constitute the factor for new and old QMPs is shown in Table 4.4.2.3 below.

TABLE 4.4.2.3: Mean and Standard Deviations of items significant by size of organization

Problems	Category	Medium	Large
Inter-unit or inter-departmental conflict	Mean (Std. Dev.)	3.251 (0.898)	3.566 (0.722)
Ineffective internal communication systems	Mean (Std. Dev.)	3.311 (0.679)	3.564 (0.566)
Learning and experiences are not shared across QMPs	Mean (Std. Dev.)	3.339 (0.899)	3.784 (0.682)

Further analyses of the components are given below.

- Inter-unit conflict is found as a major problem for larger organizations relative to medium ones (Table 4.4.2.3). This may be because the former usually has a large number of departments in the organization. Each department tries to prove itself superior and in the process devalues others. They also compete for the limited resources and for recognition within the organization that they are the best in all kinds. This increases tension between departments and arouses conflict. Also, with the implementation of QMPs, every unit gets equal opportunity to perform and the resources are also allocated uniformly. The stronger and more influential units who were earlier enjoying supremacy get annoyed and start working against the other departments. This further adds to the tension and they get isolated further.

- A larger organization with significantly greater work force is found to be unable to maintain a proper communication network within the organization (refer Table 4.4.2.3). The reason behind the fact may be that with increased work force, possibility of a group of people getting united and making clusters is also increased. This group operates within its boundary and resists entry of someone from outside the group. They establish their own norms. This makes the organization divided into a number of groups who never want to communicate with each other as each of them think that they are superior to the other. This is even possible within a unit. All this limits the communication between employees and when management also joins in the fray, there is no one who can stop this. They establish their own communication networks and severely affect the QMPs of the organizations. Sometimes, other than this, the inter-unit conflict may also account for the ineffective communication between the employees within the organization.

- Learning and experiences that a department gains from a particular programme are found not shared across the QMPs more in larger organizations (Table 4.4.2.3). The reason behind this may be that due to many departments, learning at one corner of the organization does not reach other end without any distortion. This is a serious limitation to the QMPs. Internal communication networks play a major role in sharing information between units but they are also found to get badly affected in larger organizations as discussed above.

4.4.2.3 *Presence of QM Department*

Mann Whitney U test was performed to see the significant differences in the responses between the two groups. The test results strongly supported the need for a functional QM department (Table 4.4.2.1). Except the items 'inter-unit conflict' and 'ineffective internal communication networks' which are not found to be significantly different for this contextual variable, other items advocated the need for a functional QM department in the organization. The results in a broader sense show that absence of a QM department accounts for most of the problems like inadequate teamwork for QMPs, learning and experiences not shared across QMPs and lack of support from union to QMPs. Mean scores of individual items that constitute the factor for new and old QMPs is shown in Table 4.4.2.4 below.

TABLE 4.4.2.4: Mean and Standard Deviations of items significant by presence of QM deptt.

Problems	Category	No	Yes
Inadequate use of teamwork for QMPs	Mean	3.892	2.586
	(Std. Dev.)	(0.623)	(0.811)
Learning and experiences are not shared across QMPs	Mean	3.851	3.288
	(Std. Dev.)	(0.609)	(0.753)
Lack of support from Union for the QMPs	Mean	3.627	3.035
	(Std. Dev.)	(0.719)	(0.845)

Further analysis of the individual items is presented below.

- Organizations with a functional department for quality are found to perceive inadequate use of teamwork lesser (Table 4.4.2.4). The reason may be that, the QM department is established in the organization drawing personnel from different functional areas. This acts as an example for others in the organization in favour of working as a team and with the effort of management. this idea is communicated further within the organization. People belonging to this department being the first cross-functional team. try to break the barrier between departments, if there is any, and get more people involved in the quality related projects. thereby boosting teamwork.
- Learning and experiences shared across QMPs is found to be more for organizations with a functional department (refer Table 4.4.2.4). This may be because the QMPs are handled by these departments in the organization rather than by the functional units themselves. The concerned personnel in the QM department act as coordinator of the programmes and hence grasp the essentialities of it. When the same programme again has to be

implemented in some other unit afresh, these personnel use their skill and experience to make the implementation process faster and easier, unlike the organizations where the QMPs are handled at the department level and inter-unit conflicts debar them from sharing their experiences with other units in the organization. Though a functional department could not be found to improve the inter-unit relations or internal communication networks, but it certainly improved teamwork. In the long run, it may be expected to take care of these problems also.

- The results show that a functional department for quality is able to get more support from union unlike an organization without this (Table 4.4.2.4). The reason may be attributed to the confidence shown by union leaders on the programmes and the initiatives taken on the part of the management in the department to involve union leaders in the process. A functional department makes the union leaders to think that the programme is not another tool of management to fool the workers and the it is really serious about improving the quality of work. People involved in QMPs without QM department are limited by their departmental boundary and are not able to convince others regarding the programmes.

An overall picture of organizational barrier shows that it is governed by three contextual variables: age and size of organization and presence of QM department out of which the former two are uncontrollable. The problems in such cases are inherent for the type of organizations. Nothing much can be done to reduce the average age of employees and their number in an organization. The only controllable factor which seems viable is improving the inter-personal relations within the organization and breaking barriers between departments. Management should devote time to improve the informal communication networks within the organization outside the formal reporting relationship. The only other controllable variable advises to have a functional QM department within the organization. It tries to improve the teamwork and at the same time tries to establish and improve internal communication networks. It also is able to get support from union. These all in long run may work further towards improving the inter-personal relations and break barriers between departments.

4.4.3 Systemic Barrier

This factor takes into account the following components.

- Lack of customer feedback system
- Insufficient quality training and education for employees

- Lack of recognition and reward systems for employees in QMP
- Insufficient resources for QMPs
- Conflicting quality goals
- Underdeveloped quality standards in the organization

Mann – Whitney U test results show that this barrier is significantly different by the size of organization and presence of QM department and is given in Table 4.4.3.1 below.

TABLE 4.4.3.1: Mann-Whitney test results for Systemic Barrier

Contextual Variable	Groups	Mean Rank	Sum of Rank	U	Significance
Size of the Organization	Medium Large	59.70 76.21	3164.1 6554.0	1600	0.024
Presence of QM department	Yes No	64.55 73.08	3098.4 5919.5	1338.6	0.0016

In a broader sense, this factor deals with the components which speak about the operating characteristics of an organization. The results show that larger organizations faced these problems to a greater extent. After analyzing the organizational barrier in the previous section, these problems seemed obvious for systemic barrier. Further analysis of the components with respect to the contextual variables is presented below.

4.4.3.1 *Size of organization*

Mann Whitney U test was performed to see the significant differences in the responses between the two groups. Test results show that larger organizations perceived the problems more than the medium organizations (Table 4.4.3.1). Mean scores of individual items that constitute the factor for new and old QMPs is shown in Table 4.4.3.2 below.

TABLE 4.4.3.2: Mean and Standard Deviations of items significant by size of organization

Problems	Category	Medium	Larger
Insufficient quality training and education for the employees	Mean (Std. Dev.)	2.751 (0.802)	3.724 (0.566)
Insufficient resources for QMPs	Mean (Std. Dev.)	3.411 (0.777)	2.665 (0.896)
Conflicting quality goals because of large number of quality programs at place	Mean (Std. Dev.)	2.748 (0.784)	3.419 (0.662)
Lack of customer feedback system	Mean (Std. Dev.)	3.214 (0.801)	3.562 (0.665)

Further analysis of the individual items is presented below.

- As the results indicated, larger organizations faced the problem of insufficient resource for QMPs less than medium organizations (Table 4.4.3.2). As literature says, larger organizations can spend more resources towards implementation of QMPs. Medium organizations have to focus on their product/service more than the large ones for their mere survival. So they perceived resource deficit as a greater barrier. Analysis of mean values show that though larger organizations face this problem to a lesser extent, still they are not completely free from it. A mean of >3 (in 5 point scale) for larger organizations says that more than 50 % of the respondents agreed to the above problem and perceived this as a barrier (refer Table A.3 in Appendix 4.1). The reason may be that due to more departments in a larger organization, resource allocation is not proper with limited resources available and the departments have to compete for resources. Stronger and influential departments are able to get a fair percentage of resource where as some others lag behind.

- Large number of departments or functional units in a bigger organization explains the reason for conflicting quality goals within it (Table 4.4.3.2). The departments usually operate in isolation with each one having its own QMP at place. This may be the reason for confusion among the workers to choose the best programme and act accordingly. The problem sometimes takes such serious position that the management also gets confused while choosing between programmes to focus on for their organization.

- The QMPs require that all the employees and the organization should be trained in quality. Though the organizations implementing QMPs take up massive training programmes, still the larger organizations lag behind the medium ones in imparting quality training to all employees (refer Table 4.4.3.2). The reason behind this may be that as the results show, a larger organization has more problems associated with its systems. It has the problem of conflicting goals for quality and improper customer feedback system which shows that the organizational system is not properly placed. Though the resource problem is lesser as compared to medium organization, still it exists and accounts to some extent the inadequate training of employees in QM. Again the education of workers varies greatly and they all may not take interest in getting trained in quality which they think overburdens their job. Lack of trained personnel to impart training at all levels may also be a reason for insufficient training for the employees.

- Inefficient customer feedback system is found to plague large organizations to a greater extent (refer Table 4.4.3.2). An efficient feedback system requires a proper communication channel within and outside the organization. The results show that either customer information is not collected on a regular basis or are not communicated properly to all employees as per requirement (refer Table A.3 in Appendix 4.1). The reason may be that for an efficient feedback system, large amount of data are to be acquired, analyzed properly and disseminated to the employees in time which is not the case found for a large organization due to the ineffective communication channels.

4.4.3.2 *Presence of QM department*

Mann – Whitney U test was performed to see the significant differences in the responses between the two groups. Results from this test further placed the need for a functional QM department on firm footing. The statistics show that a functional QM department in the organization can eliminate almost all of the systemic problems except the problem of insufficient resources which is not found significant (Table 4.4.3.1). The reason for this may be that like other departments, the QM department also gets some percentage of the resource to carry out the quality related projects and unless the results of QMPs are very convincing to the top management, they will also face the problem of limited resource. Again, the plans and policies and resource allocation for the organization are done at the top management level. So the top manager's commitment to the programmes can only solve the problem.

TABLE 4.4.3.3: Mean and Standard Deviations of items significant by presence of QM deptt.

Problems	Category	Yes	No
Insufficient quality training and education for the employees	Mean (Std. Dev.)	2.608 (0.810)	3.241 (0.675)
Underdeveloped quality standards	Mean (Std. Dev.)	3.081 (0.638)	3.616 (0.557)
Conflicting quality goals because of large number of quality programs at place	Mean (Std. Dev.)	3.028 (0.801)	3.868 (0.652)
Lack of recognition and reward systems for employees in QMPs	Mean (Std. Dev.)	2.785 (0.882)	3.412 (0.637)
Lack of customer feedback system	Mean (Std. Dev.)	2.784 (0.971)	3.286 (0.686)

Further analysis of the components is as below.

- A functional QM department in an organization considerably reduces the confusion regarding the best quality programme as the results show (Table 4.4.3.3). This may be because the QMPs are handled under the direct supervision of experts of these departments and they are clear regarding the programmes and their results. They design the programmes in alignment with the broader goals of the organization and effectively communicate the objectives of the programmes to all employees. The employees simultaneously work on a single programme which makes them clear regarding what they have to do at their work place to excel in quality.

- Usually a functional department draws experts from all units and levels within and outside the organization. So presence of QM department greatly reduces the problem of underdeveloped quality standards within the organization as the results indicate (refer Table 4.4.3.3). They define each and every process and set standards for them unlike the organizations where there is no QM department. In the latter case, the person involved in quality only sets standards for his/her department which may not be in line with the broad organizational objectives. Again, unlike a QM department, they operate individually which limits the exploration of new ideas. So they face the problem of underdeveloped standards to a greater extent.

- As test results indicate, absence of QM department always results in insufficient quality training and education for the employees (Table 4.4..3.3). The reason may be that in such cases the personnel involved in quality tend to take care of only their focus areas and forget about the organization. On contrary, since it is the primary responsibility of the QM department to train all employees in quality first, they carry it out effectively. A team of experts in quality from different functional areas also understand the desired level of training required to be imparted and hence focus on those.

- An organization without a functional department in quality also acts to the extent of implementing the programmes and cannot take care of the employee recognition and rewards as the test results show (refer Table 4.4.3.3). This is also the reason why they face low participation. Again these all combine and result in management not giving due attention to employees working in quality related areas. They are neither recognised nor rewarded for their performance. But a functional QM department is found to face this problem lesser which may be due to the fact that they have the executive power to decide

on the above factors. They ensure that if a person is contributing to the organization, he/she is recognized and rewarded appropriately.

- QM departments establish efficient customer feedback systems and let each employee know about their performances and the extent to which they affect the organizational performance. In absence of a QM department, no one takes the responsibility of handling vast information about customer. The collection of data on customer satisfaction etc., dissemination to different units and then to the employees is done by different units in the organization. A QM department keeps liaison between all such departments and also in between does the job of interpreting the data.

An overall analysis of the systemic factor show that it is controlled by two contextual variables: size of organization and presence of a functional department for QM. Again size of organization is beyond the control of management, The only way out to reduce the barrier is to create awareness among the employees regarding the QMPs and giving them adequate training in quality. Though employee education still remains a barrier, proper design of quality training aimed at these employees can improve the situation. The employees also need to be recognized and rewarded for their contribution in quality. They are made aware of the degree to which their work behaviour affects the organizational performance. This all is facilitated if the organization has a functional QM department.

4.4.4 Employee Barrier

This factor takes into account the following components.

- Difficulty in changing employee attitude towards QMPs
- Fear or Resistance to change the way the employees do things
- Lack of commitment and confidence for QM from the employees
- Lack of empowerment and participation of the employees
- Inadequate knowledge and understanding of quality management systems

Mann–Whitney U test results show that this barrier is significantly different by the age of organization, age of QMPs, union's involvement, benefits given and nature of participation where as K-W test show it to be significantly different for level of management. The test result is shown in the Table 4.4.4.1 below.

TABLE 4.4.4.1: Mann-Whitney and K-W test results for Employee Barrier

Contextual Variable	Groups	Mean Rank	Sum of Rank (H)	U (d.o.f.)	Significance
Level of Management (K-W test)	Top Middle Lower	66.11 69.72 78.24	(6.99)	(2)	0.0300
Age of the Organization	New Old	66.43 80.21	3520.8 6898.1	1490	0.0060
Age of QMPs	New Old	76.83 67.94	2921.4 6807.5	1444	0.0233
Union's Involvement	No Yes	77.28 60.36	4404.96 4587.36	1664	0.0330
Benefits Given	No Yes	72.49 57.86	3624.5 4570.9	1493	0.0099
Nature of Participation	Voluntary Compulsory	70.99 81.67	4259.4 5635.2	1678	0.0322

The analysis shows that older organizations having an older system at place perceived this barrier more than newer organizations. Also, the problem is found to be higher for lower managers, newer QMPs. non-involvement of union, no benefits given and compulsory participation. Further discussion about the relationships is given below.

4.4.4.1 *Level of Management*

K–W test for the significant difference between the perceptions of these groups yielded interesting results. Lower managers perceived the problems to the greatest extent followed by middle and top managers. The reason for this may be because the lower managers are the people directly dealing with the programmes at the grass roots level and hence are aware of the difficulties faced. Mean scores of the individual components which make up this barrier is given in Table 4.4.4.2 below.

TABLE 4.4.4.2: Mean and Standard Deviations of items significant by level of management

Problems	Category	Top	Middle	Lower
Difficulty in changing employee attitude	Mean (Std. Dev.)	3.134 (0.821)	3.424 (0.684)	3.664 (0.632)
Fear or resistance to change the way of work	Mean (Std. Dev.)	3.227 (0.795)	3.389 (0.701)	3.671 (0.585)
Lack of commitment and confidence from employees	Mean (Std. Dev.)	3.212 (0.822)	3.450 (0.721)	3.748 (0.603)
Lack of empowerment and participation from employees	Mean (Std. Dev.)	3.009 (0.796)	3.306 (0.731)	3.703 (0.671)
Inadequate knowledge and understanding of QM systems	Mean (Std. Dev.)	3.113 (0.833)	3.506 (0.732)	3.654 (0.596)

Further analysis of the components is presented below.

- The problem construct 'difficulty in changing employee attitude towards QMPs' is found to be significantly high for lower managers (Table 4.4.4.2). The reason may be attributed to the fact that when it comes to implementing QMP at the work place, it is the lower manager who deals with the employees directly among the three levels of management. They get the first hand experience of the difficulties that the employees pose to the QMPs. The programmes aimed at changing employee attitude also are handled by them and it may be that at times they have to persuade the employees to participate in the programmes. So they perceived the problems most. Again, though middle and top managers found the problem to a lesser extent, they did not disagree to it. The reason may be that the employee problems which cannot be handled by the lower managers are communicated upwards for middle and top management to solve. This is the reason middle managers perceived the problem more than top managers.

- Lack of empowerment and participation of employees also is found to be more for lower managers followed by middle and top managers (Table 4.4.4.2). The same reason as above discussion may also be given here. Since the actual implementation process is supervised by the lower managers, they often see the problem of participation from employees clearly. Also, the lower managers are at an advantageous position to blame middle and top managers for not empowering the employees for QM. This may be another reason for their higher perception of the problems. Another reason also may be that QMPs ask for empowerment of the employees at their work place. But our traditional managers fear loss of 'command and control' through empowerment and never go for it completely.

- The problem 'inadequate knowledge and understanding of QM systems' is perceived by the lower managers significantly to the greatest extent (refer Table 4.4.4.2). This may be because these people take the task of training the employees in the organization after being thoroughly trained by their superiors. The varied and low educational background of workers also do not allow them to carry out the training programs smoothly and timely. The lower managers face the problem from employees not understanding the meaning of quality at their work place. Middle and top managers perceived this problem to a lesser extent as they only deal with training of lower and middle managers respectively who are better educated.

4.4.4.2 *Age of Organization*

The test results show that the respondents belonging to the older organizations perceived the employee barrier to a greater extent than the newer organizations (Table 4.4.4.1). Analysis of the individual components also show that almost all problems except 'inadequate knowledge and understanding of QM systems' are found significant for age of organizations. Mean scores of the individual items are given in Table 4.4.4.3.

TABLE 4.4.4.3: Mean and Standard Deviations of items significant by age of organization

Problems	Category	New	Old
Difficulty in changing employee attitude	Mean (Std. Dev.)	3.121 (0.738)	3.636 (0.669)
Fear or resistance to change the way of work	Mean (Std. Dev.)	3.266 (0.788)	3.873 (0.670)
Lack of commitment and confidence from employees	Mean (Std. Dev.)	3.203 (0.866)	3.819 (0.631)
Lack of empowerment and participation of employees	Mean (Std. Dev.)	3.265 (0.774)	3.785 (0.593)

Further analysis of the relationship is presented below.

- Older organizations faced the problem of difficulty in changing employee attitude to QMPs more (Table 4.4.4.3). The reason may be that the average age of employees in old organizations is higher and they are mostly habituated to routine kind of task. The QMPs call for alteration in the old work habits to increase efficiency and reduce wastage of resources. It is very difficult to change the habits of those people who are on the verge of retirement. Some of them may even have strong influence among the employees and hence try to prevent them from adopting the new methods of work.

- Employees' resistance to change is also found to be significantly higher in older organizations (Table 4.4.4.3). The same reason as above may be cited here. Older employees nearing retirement are reluctant to change their age-old working methods and hence resist any new way of doing their job. Another reason may be that employees fear to adopt new methods as they think it may act as a threat to their job security / authority / influence. The resistance from management may be due to their fear of empowering their sub-ordinates which they perceive may affect control and command over the employees.

- Lack of commitment and confidence for QM from employees is also found to a greater extent in older organizations (Table 4.4.4.3). The reason may be that older organizations have the prevailing culture of work habits that is set by the oldest employees of it. The new employees gradually fall into this culture. The results show that this culture may not be conducive to QM improvement efforts. This may be the reason the employees never show commitment in the programmes. Again, lack of confidence may be due to ineffective communication networks within the organization to pass the message that the programmes offer employees the challenge, training, tools and authority to self-manage their work rather than acting as a threat to their job security.

- Lack of empowerment and participation is found to be higher for older organizations (Table 4.4.4.3). The reason for lack of empowerment may be because of the fear of management about loosing control over their sub-ordinates as the former are accustomed to a traditional method of command and control. Lack of participation from employees in older organizations may be due to their lack of confidence in the programmes that we had discussed above.

4.4.4.3 *Age of QMPs*

The Mann-Whitney test results show that the respondents belonging to the newer QMPs perceived the employee barrier to a greater extent than the older QMPs (Table 4.4.4.1). Analysis of the individual components also show that all problems are found significant for age of organizations. Mean scores of the individual items is given in Table 4.4.4.4 below.

TABLE 4.4.4.4: Mean and Standard Deviations of items significant by age of QMPs

Problems	Category	New	Old
Difficulty in changing employee attitude	Mean (Std. Dev.)	3.748 (0.595)	3.102 (0.800)
Fear or resistance to change the way of work	Mean (Std. Dev.)	3.775 (0.673)	3.009 (0.798)
Lack of commitment and confidence from employees	Mean (Std. Dev.)	3.667 (0.553)	3.266 (0.829)
Lack of empowerment and participation of employees	Mean (Std. Dev.)	3.667 (0.727)	3.226 (0.869)
Inadequate knowledge and understanding of QM systems	Mean (Std. Dev.)	3.823 (0.629)	3.007 (0.772)

Further analysis of the relationship is presented below.

- Newer QMPs faced the difficulty of changing employee attitude towards QMPs more. Also, they found maximum resistance from employees towards the QMPs (Table 4.4.4.4). The reason may be due to the fact that newer QMPs implement some methods of work to which the employees are completely unknown. These employees take time to change their attitude towards accepting these methods at their work place. So implementation methods in newer QMPs face resistance from employees at this stage. On contrary, the older QMPs have already crossed this stage and the employees are to some extent adaptable to the changing conditions. The test results also indicate the same as shown in the individual items in Table A.4 in Appendix 4.1.

- Lack of commitment and confidence from employees is high in newer QMPs as the results indicate (refer Table 4.4.4.4). The reason may be that the employees are committed to the programmes when they have complete confidence in it. As we have found in our discussion above, obtaining confidence from employees for any new programme takes considerable amount of time. Obtaining confidence from employees for a particular programme depends on the extent to which the management of the organization effectively communicates the objectives and advantages of QMPs. Also another reason for the above problem may be that the employees see others before adopting any new methods for themselves. This takes time and hence the newer QMPs face the problems to a greater extent.

- Lack of empowerment and participation of the employees is found to be more in newer organizations. The reason for lack of empowerment may be because the management is not ready to loose command on its sub-ordinates so easily and so soon. If at all it empowers the sub-ordinates, they gradually do it over a long period of time. The older organizations also show lack of empowerment to some extent. So it is believed that the newer organizations will overcome this problem after some years of implementation of the programmes. Also, it is believed and supported by literature that participation increases considerably with empowerment (refer section 2.6). This may be the reason of low participation from employees in newer QMPs.

- Newer organizations face the problem of inadequate knowledge and understanding of QM systems to a greater extent. The reason may be that organizationwide training of the employees takes considerable amount of time and is done over a period. So the

organization may not reap the benefits of training its personnel instantly as is found from the results of newer QMPs (Table 4.4.4.4). Also another reason may be that low participation from employees in QM in newer QMPs considerable affect the their knowledge and understanding regarding the QM system.

4.4.4.4 *Union Involvement*

Mann-Whitney test show that the factor 'employee barrier' is significantly different by involvement of union in the QMPs (refer Table 4.4.4.1). The problems are found to be more if union is not involved in the change programmes. Mean scores of the components found significant by the contextual variable 'union involvement' are shown in Table 4.4.4.5 below.

TABLE 4.4.4.5: Mean and Standard Deviations of items significant by union involvement

Problems	Category	Yes	No
Difficulty in changing employee attitude	Mean (Std. Dev.)	2.966 (0.801)	3.556 (0.666)
Lack of commitment and confidence from employees	Mean (Std. Dev.)	2.886 (0.911)	3.400 (0.718)
Lack of empowerment and participation of employees	Mean (Std. Dev.)	2.901 (0.801)	3.556 (0.666)

Further analysis of the components with respect to the contextual variable is given below.

- Difficulty in changing employee attitude towards QMPs is found to be more if union is not involved in the QM activities (Table 4.4.4.5). The reason may be attributed to the fact that employees always find themselves associated with the union and abide by its rules and regulations. Non-involvement of union leaders in the QMPs or their exclusion from QM steering committee may result in the former feeling that the QMP is aimed at reducing their influence and as a result the process of implementation may get doomed before it even started (refer section 2.7). Since the union leaders control the employee behaviour towards the programmes, the organizations which do not involve union face more trouble.
- The organizations that do not involve union in the QMPs found lack of commitment and confidence for QM from employees more (Table 4.4.4.5). As employees follow their union leaders in every work they do and have confidence them, they may feel that the management is using them as a tool for its benefit. This may be the reason that they never show confidence in the programmes. As we have already discussed, commitment directly

follows confidence to a large extent, lack of confidence also seriously affects commitment from employees.

- Results also show that the problem of sustaining workers participation to the QMPs is more when union leaders are not included in the enabling structure for implementation of QMPs (Table 4.4.4.5). Analysis of individual items reveals that in the organizations, where union leaders were not involved in the different committees that constitute the enabling structure, all the items under the construct had mean value above 3 (refer Table A.4 in Appendix 4.1). This indicates that if union is not taken as partner in the organizations' efforts towards implementing QMPs, the union support is difficult to achieve and hence sustaining workers participation in these activities is also difficult. Literature says that union may become a facilitating factor as well as a hindering factor for any kind of change programme depending upon their involvement in the programmes.

4.4.4.5 *Benefits given* (to Employees for participation in QMPs)

Mann-Whitney test results show that the factor 'employee barrier' is significantly different by benefits given to the employees for their participation in the QMPs (refer Table 4.4.4.1). The problems are found to be higher if no benefit is given to employees. Though the component 'lack of commitment and confidence from employees' have high mean for benefits given, still the mean value for no benefits (> 3) show that they are not free from it. So when analyzed as a single factor, the case of no benefits given posed a greater problem than the other one. Mean scores of the components found significant by the contextual variable 'benefits given' are shown in Table 4.4.4.6 below.

TABLE 4.4.4.6: Mean and Standard Deviations of items significant by benefits given

Problems	Category	Yes	No
Resistance to change the way the employees do the things	Mean (Std. Dev.)	3.065 (0.816)	3.931 (0.517)
Lack of commitment and confidence from employees	Mean (Std. Dev.)	3.846 (0.647)	3.270 (0.934)
Lack of empowerment and participation of employees	Mean (Std. Dev.)	2.658 (0.828)	3.446 (0.611)

Further analysis of the components with respect to the contextual variable is given below.

- Fear or resistance to change the way the employees do things is found to be higher if no benefit is given to them (Table 4.4.4.6). The reason for this may be due to the workers belief that the programmes are for the benefits of the management and not for their welfare. So when the workers need to participate in these activities in addition to their functional activities, they feel overburdened and hence they demand incentives for their participation. If no benefit is given for their involvement, they resist the programmes. This also shows that external motivation can succeed in sustaining employees' participation in the programmes.

- Results show that lack of participation is high if no benefit is given to the employees. The employees feel that they are doing the right amount of work for their salary and the QMPs are an additional burden as they have to give more time attending meetings / workshops / seminars or training programs. This may be the reason for their increased participation in the QMPs if benefits are given, though it violates the basic principle of any QM programme.

- Interestingly, lack of commitment and confidence from employees is found to be less if benefits are not given. The reason for this may be that though the benefits increase participation, but it may be possible for the employees to think that by giving little benefits, the management tries to get more work out of them. So they loose confidence in the programmes and as a result are not committed to the programmes though they continue to participate. We can say that the participation is more of mechanical in nature that from their heart.

4.4.4.6 *Nature of Participation*

Mann-Whitney test results show that the factor 'employee barrier' is significantly different by nature of participation of the employees in the QMPs (refer Table 4.4.4.1). The test shows that problems are higher with compulsory participation of the employees in the programmes. Though the components 'lack of empowerment and participation of employees' and 'difficulty in changing employee attitude towards QMPs' have high mean for voluntary participation but when analyzed as a single factor, the case of compulsory participation posed a greater problem than the other one. Mean scores of the components found significant by the contextual variable 'nature of participation' are shown in Table 4.4.4.7 below.

TABLE 4.4.4.7: Mean and Standard Deviations of items significant by nature of participation

Problems	Category	Voluntary	Compulsory
Difficulty in changing employee attitude	Mean (Std. Dev.)	3.132 (0.766)	2.674 (0.923)
Resistance to change the way the employees do the things	Mean (Std. Dev.)	2.873 (0.868)	3.359 (0.656)
Lack of commitment and confidence from employees	Mean (Std. Dev.)	3.154 (0.802)	3.776 (0.691)
Lack of empowerment and participation of employees	Mean (Std. Dev.)	3.530 (0.783)	2.902 (0.908)

Further analysis of the components with respect to the contextual variable is given below.

- Test results show that difficulty in changing employee attitude towards QMPs is more for voluntary participation (Table 4.4.4.7). The reason may be that by making the programmes voluntary, the management leaves the employees on their own to operate. This shows lack of commitment on the part of management to the QMPs though making the participation voluntary violates the principles of QMPs. Lack of commitment from management means that they never try seriously to change employee attitude to become conducive for QMPs. So the organizations making the participation voluntary for employees face more problem.

- Interestingly, results show more resistance to change from employees if the participation is made compulsory for QM. This shows that pressing the employees for adopting the QMPs result in increased resistance from them. Same explanation as above in case of difficulty in changing employee attitude may also be given here. It shows that employees are not susceptible to change and when they are forced on something new to adopt, their resistance increases.

- Compulsory participation also shows lack of confidence and commitment to a greater extent (Table 4.4.4.7). The reason may be that the employees think they are forced to do extra job for quality and hence they may take anti stand for the QMPs. They may think that management is using them for their benefits and they will not get anything out of it.

- Lack of empowerment and participation is also found to be more for voluntary participation. Since voluntary participation to some extent shows lack of commitment from management towards QMPs, it is not possible for management to get sustained participation from employees. This may be the reason for low participation from

employees in case of voluntary participation. Also, in this case, they may not dare to empower the employees for the fear of loosing control over them.

An overall picture of employee barrier shows that it is the only factor that is affected by most of the contextual variables. This may seem at the same time that it is controllable to the greatest extent as compared to other factors of implementation that we have discussed till now. But this is not actually the case. Out of 6 contextual variables affecting it significantly, three are controllable. Union leader's influence considerably increases the participation and commitment from employees and its usefulness can be harnessed by the organizations which have union. Also choice of appropriate benefits can increase participation but it is found to act opposite to commitment from employees and also violates the basic principles of QM. Again, compulsory participation increases involvement of employees in the QMPs but but reduces confidence of employees in the programmes and also affects commitment. So it is the most difficult factor to handle.

4.5 Content Analysis of the Open Ended Questions

The questionnaire used in the survey included an open-ended question to the respondents to write about their perception on the problems faced by their QMPs. The issues that emerged as most significant to many respondents are addressed here:

4.5.1 Education of the workers and success of QM initiatives

The level of education of the shop floor workers in majority of Indian organization is very low. A top level manager in a small organization (ATE Enterprise), involved in the QM activities of that organization, stated that the major challenge to him is to educate the workers in his organization. Since QMPs need workers to learn some basic tools so that they can solve quality related problems effectively and contribute to the success of the programmes. As an organization established way back in 1938, most of the employees at the lower level are not educated and most of lower level managers are not technically proficient. Though the employees are experienced enough to handle the day to day operations of the plant, they show little proficiency in group activities. Training programmes are regularly conducted to train the workers and they show considerable enthusiasm in learning the concepts of QM, but reality is that when it comes to use the tools and techniques, they fail miserably. Even

managers of the large organizations also addressed this problem during the survey. One manager of an organization involved in the production of automobile componenets told the researcher that suggestion coming from the workers often lack depth and most of their suggestions are not feasible. He attributes this to the low education level of the workers and their lack of technical competence.

Another manager of a new plant of a major automobile company reported the same problem in a different manner. He stated that one of the major reasons for which the group activities like Kaizen, Q.C., SGA are not producing satisfactory results is that the level of knowledge of the employees recruited as skilled workers is very poor. Enormous effort is needed to make them technically competent and to bring them to the level where they can really contribute to the quality improvement projects. Another manager of the same organization reiterated that "what this organization needs at this junction of quality movement is a strong training programme and continuous counseling of the members involved in Kaizen and Q.C. activities". But the issue that is still not clear is whether the training programmes can really contribute towards improvement in employees' knowledge towards quality. One senior manager of electronic parts manufacturing company believed that the training programme conducted in his organization was really paying results. He claimed that the continuous education programme for the employees in his organization not only brought up quality of its products but it had also helped in reducing its cost of quality as well.

The entire issue of employees' educational background is a debatable issue. Though the managers reported the poor educational background of workers as a major hurdle in getting result from the workers' involvement activities, it should not be forgotten that people who were not involved in such activities for a major part of their life and who were never given the opportunity to use their heads in their workplace before, cannot suddenly learn all the methods and techniques taught to them.

4.5.2 Voluntary Participation of Workers

The debate over the issue of voluntary participation of workers in the quality-related activities never ends in Indian organizations. This issue was first addressed by an organization during personal visit, where managers believe that only compulsory participation can become successful in Indian organizations. The above organization runs their quality circles and other employee involvement activities as mandatory for all the

workers, although quality literature advocates voluntary participation of workers in QCs and SGAs. The managers, in some organizations, who believe in the voluntary participation of workers sometimes even refuse to give benefits to the workers for participation. A top manager of a local manufacturing organization told researcher during interview that the members of a QC of his organization asked for uniform when they went to represent the organization in a national level competition. He was interested in giving them uniforms, but his fellow managers opposed this stating that giving such benefits may violate the philosophy of QC. In another organization, a middle level manager expressed that he personally feels the need of benefits to the workers giving good performance in the group activities. The needs of Indian workers are somewhat different from those in other countries like Japan. So voluntary participation may become successful there. But in India, considering the financial status of the workers, some financial benefits may provide motivation to the workers to participate in the group activities. The analysis of the problems in section 4.4 also supported the argument. It was seen that organizations giving financial benefits though get increased participation, but found to face more difficulty in getting employees committed to the programmes. At the same time, it has also been observed that the organizations where participation is compulsory for all workers, are also not successful in meeting their objective.

4.5.3 The Need for Change in Mindset

Literature says that in the new paradigm of TQM, managers need to facilitate workers rather than commanding and controlling them. But this change in mindset is quite difficult for the Indian organizations. This was illustrated by one top manager of an organization, who once single handedly guided the QC movement in his organization. The QC movement in his organization failed after few years not because of problems like difficulty in sustaining workers participation, it failed because of some managers' skeptical attitude towards the programme. The QCs were doing very well in the organization for quite some time. The workers were participating regularly and were able to come out with some good suggestions which were implemented successfully. The problem emerged when the demand for production was very high in a particular month. The General Manager (Production) asked his managers to stop the QCs as he perceived that these activities were hampering production. The manager heading the QCs asked the workers to stop QC meetings until the peak production period gets over. The workers said that the activities were carried out only in leisure hour, so there was no need of stopping them. So the manager also decided that these activities would be continued but only in the leisure hours. The GM (Production) was not

satisfied and requested the manager to stop the activities again at least for that month. The manager then decided to stop the activities of QC immediately. The QCs were stopped, but it could not be started again in the organization. All the members of QCs resigned within the next two months. This case shows a clash of ego between the managers in the changing paradigm. This is more prominent in Indian organizations where there is a long hierarchy of managers.

4.6 Respondents Perceptions of Organizational Performance

An attempt is made to understand the perception of respondents about the improvements that they have observed in their organizations after implementation of QMPs. Part 'D' of the questionnaire is used for this study. The items were directly taken from Asian Productivity Organization's survey report on their survey conducted to evaluate TQM practices in the Asia Pacific region. A score of 3 or more (in 5 point scale) shows that most of the respondents agreed to have seen moderate improvements in the performance of the organization after implementation of the QM programmes. The following Table 4.6.1 presents the mean scores of the general perceptions of the respondents.

TABLE 4.6.1: Mean and Standard deviation of the performance variables

Performance Variable	Mean	Standard Deviation
1. Quality of output of your organization	4.17	0.525
2. Relationship among all the employees of your organization	3.35	0.732
3. Minimization of waste	3.47	0.666
4. Level of knowledge of the employees related to quality management activities	3.18	0.701
5. Overall minimization of cost	3.03	0.711
6. Quality of materials supplied/service delivered	3.91	0.603
7. Levels of customer satisfaction	4.07	0.597
8. Control over operational activities	3.64	0.774
9. Participation of employees in decision making	3.49	0.861
10. Communication of information between management and employees	3.33	0.736
11. Change in employee attitude and behaviour	3.29	0.865
12. Reduction of inter-departmental barriers	3.11	0.809

The results indicate that moderate to high improvements have been achieved in most of the organizations after implementation of QM. Relatively high mean for the item 'quality of output of your organization' (mean = 4.17) shows that most of the respondents felt the

improvement in the quality in their organization after implementation of QMPs. Since most of the respondents are involved in quality programmes in their organizations, possibility of a biased response cannot be denied. No further attempt is made to analyze the performance variables because of this.

4.7 A framework to Think About the Barriers of QMPs Implementation

The analysis of the problems in the light of contextual variables has shown that the problems identified in this study are affected by both organization context as well as the approach of the management in implementing the programmes. In the following sections each of the 4 composite factors are discussed in the light of the significant contextual variables that affect the problem taking into account the component items of it.

4.7.1 Managerial Barrier

The management at the first place feels the need for a QMP in an organization. Choice of an appropriate programme for the organization as well as the goals of the programme also are set by them. So we can say, success of the programmes or the problems faced during the implementation process are solely dependent on the proper planning of the programmes by the management keeping in mind the specificity of the organization as opposed to other organizations. From the analysis in section 4.4.1, the present composite factor is found to be significantly different by level of management, age of QMP and presence of a functional department for quality. A general understanding of the whole problem is as below.

Lack of top management commitment emerged as a significant component of managerial barrier. It is found to be different by level of management as the middle managers perceived the problem to the greatest extent. Also, this problem is significant for older QMPs and for organizations without a functional QM department. While in the former, the top managers are found to gradually lose interest in the programmes thereby leaving the programmes to suffer. in the latter, a functional QM department in the organization is expected to improve commitment by putting pressure on top management to feel responsible towards the programmes.

Middle managers also perceived the problem of improper vision and mission for QMPs to the greatest extent. This indication is perhaps towards the top managers incompetence in planning for the QMPs as they are the people involved in it. Also, organizations without a

functional department for quality found this problem of commitment from top managers to a greater extent. While middle managers perception indirectly tells about lack of top management commitment, absence of QM department in the organization also supports this fact as we have found in previous discussion. Again, the problem of short-term focus is found to be more in newer QMPs and as results show, newer QMPs are better in terms of top management commitment. So lack of expertise in QM may be the factor responsible for an inconsistent approach towards quality policies. Also, absence of a functional QM department adds to this problem. This is because an organization without a QM department faces lack of expertise in QM.

Centralized decision making is perceived as a problem to the greatest extent by lower managers in the organization. This problem shows that lower managers need attention as they are the people actually involved in the process of implementation and their perception regarding a problem accounts for much. The bureaucratic style of decision making in the enabling structure delays the implementation of the programmes significantly. This problem is greater in newer QMPs with newly established standards and norms for quality. The steering committee for QM is not allowed to take its own decision which may be due to the top management's perception that the former since newly established, may not take correct decisions.

Lack of expertise in QM as we have already discussed above is mostly perceived by the lower managers followed by middle managers. This perception again indirectly hits the top management as they are at the top of every committee for QM. Newer QMPs faced this problem more in not being able to draw experts in quality from all units of the organization and also from outside. Again, absence of functional QM department also feels the problem of lack of expertise in QM in the organization. It is found unable to retain experts in it.

High turnover of key executives associated with QM in the organization is the problem perceived by the middle management of service organizations most. This clearly shows lack of commitment from top management towards QM as they jump from organization to organization for their personal benefits thereby leaving the organizations to suffer. Also, this problem is higher in older QMPs where the key executives associated with QM are already experts in the area of quality as their years of experience are higher. This supports our previous argument that older organizations face lack of commitment to a greater extent.

All the above discussion tries to put forth two major points. They all converge on two requirements that are vital for success of any QM programme in any organization. The requirements are *sustained top management commitment* for QM and a *functional department for QM* in the organization. Sustained top management commitment solves the frustrations of middle and lower managers by becoming example for them and making them feel responsible to the programes. It also can take care of the problems of centralized decision making by speeding up the process of decision making. This commitment is further enhanced and ensured by a functional department in QM in the organization. A functional department is found to give the organization a well-defined goal for quality with proper vision to proceed and excel in quality in form of drawing and retaining experts in it. So the success of the present day QMPs can be ensured by sustained top management commitment with a functional department in QM in the organization.

4.7.2 Organizational Barrier

As discussed in section 4.4.2, this composite factor of barrier deals with the issues pertaining to the functional aspects of the organization mostly related to the inter-personal relationships. Analysis of this composite factor had shown its significance with respect to age of organization, size of organization and presence of QM department in the organization. A general understanding of the whole problem is as below.

Inadequate use of teamwork is found to prevail in older organizations where traditional methods and values of operation are found to prevent a healthy relationship between the employees. Also, organizations without a functional QM department greatly reduced the use of teamwork. A functional QM department, since draws people from across units of the organization, is able to encourage and enhance teamwork.

Inter-unit conflict remained as a major problem for older organizations. These organizations having barriers between departments (section 4.4.2.1) are unable to carry out the programmes smoothly and also simultaneously greatly reduce teamwork due to this. Again the conflict between departments is high with larger organizations which have more number of departments. The variables being both uncontrollable, nothing can be done to improve the inter-unit relations unless the units feel themselves responsible towards it.

Ineffective internal communication system is found to prevail in older and larger organizations to a greater extent. Again, inter-unit conflict in such organizations is found to influence this problem. An organization with conflict between its units cannot keep a good communication network at place and hence may further reduce teamwork. Learning and experiences of one department from a particular programme also is found to be affected by this. But it can be taken care of by a functional QM department in the organization to some extent. This is because the department handles the QMPs as a facilitator and easily shares the information between departments. It also acts towards improving teamwork as discussed in section 4.4.2.3.

Lack of support from union is found to be a greater problem for older QMPs due to their inability to translate the broad quality goals to union leaders because of their improper communication networks. But this problem can be overcome to some extent by a functional department in QM which tries to improve communication between employees.

All the above discussion tells that a good interpersonal relationship between the employees improves the performance of the QMPs. Age and size of organization being beyond control, the factors cannot be manipulated to improve this relationship. Hence the employees should feel themselves responsible to the programmes to get significant results from the QMPs. A functional QM department tries to improve this to some extent by enhancing teamwork within the organization by focussing on the cross-functional projects. It is also able to get support from union leaders towards the programmes. In the long run this all may be expected to improve the inter-unit relationship through effective communication networks.

4.7.3 Systemic Barrier

As discussed in section 4.4.3, this composite factor deals with the issues pertaining to the operating characteristics of the organization. It focuses on the organizational system as it functions in the organization. Analysis shows this composite factor is significantly different by size of organization and presence of QM department. A general understanding of the whole problem is as below.

Lack of a customer feedback system is found to be a problem with larger organizations. They usually either are not able to collect the customer information on a regular basis or are not able to give an appropriate feedback to the departments on their performance as it affects the

quality of output. This problem is handled to some extent by the QM department and hence organizations having a functional department for quality found to have a good customer feedback system.

Insufficient quality training and education is found to a greater extent in larger organizations which may be due to its inability to handle massive training programs efficiently and timely because of its large work force. But as expected, a QM department in the organization greatly reduced this problem as training and educating the employees in quality is one of the major responsibilities of any QM department.

Lack of recognition and reward systems are found to be lesser for organizations having a functional QM department as it tries to keep sustained participation of employees in QM through recognizing and awarding them appropriately.

Insufficient resources for QMPs is found to be a problem for medium organizations as they have to focus on their mere survival first unlike larger organizations who focus on quality of product.

Conflicting quality goals due to large number of quality programmes at place at the same time is found to plague larger organizations to a greater extent. Large number of units in a large organization having their own quality programme is the reason for this. Also, insufficient quality training and education in large organizations adds to this problem. But a functional QM department since handles all programmes at its level as facilitator solves this problem to some extent. It ensures that employees are aware of the programmes through training.

Underdeveloped measurement of quality is found to be a greater problem for organizations without a functional QM department. This seems obvious, as the responsibility of QM department is to measure and standardize the processes. The QM department sets the industry standards for the organization and hence they usually don't face the problem of underdeveloped standards for quality.

All the above discussions suggest improvement in the systemic aspect of the organization to ensure a good QM system. Reduction of the systemic barrier requires a good customer feedback system, inadequate training and education of employees in quality, sufficient resources made available at the appropriate time for QMPs, a proper recognition system for

employees and a well developed quality system with the processes standardized as per industry standards. Size of the organization affects some of the above requirements but it is beyond control. Presence of QM department tries to address some of the issues above and can be used to reduce the problems of systemic barrier.

4.7.4 Employee Barrier

As discussed in section 4.4.4 the present composite factor deals with issues pertaining to the employee related problems existing in the organization. Analysis shows that this factor is significantly different by level of management, age of organization, age of QMPs, union involvement in QMPs, benefits given to employees for their participation in QMP and nature of participation. A general understanding of the whole problem is as below.

Difficulty in changing employee attitude towards QMPs emerged as a big problem for lower management as they have to deal with the employees directly in the actual process of implementation of the programmes. They also perceived more resistance from employees to QMPs. Older organizations operating on traditional values also perceived this problem to a greater extent. They also found greater resistance from the employees towards change. Newer QMPs implementing completely new methods of work for the first time in the organization also suffered resistance from the employees. Interestingly, involvement of union leaders in the QMPs found it easy to change employee attitude conducive to the programmes where as voluntary participation in QMP is not found to be able to change the attitude of employees. At the same time. resistance to the programmes increased if the participationis made compulsory.

Lack of commitment and confidence from employees is perceived by the lower managers to the greatest extent along with lack of empowerment and participation. This is due to their direct involvement in the implementation process unlike the middle and top managers. The problem of commitment and confidence is found more in older organizations because of its old methods of work and old work habits. The resistance from them to the programmes supports this as we discussed above. Again, newer QMPs found lesser commitment and confidence from employees. Their resistance to change further supports this. Non-involvement of union leaders in the QMPs reported lower commitment and confidence from employees. Even the organizations giving benefits to workers for their participation in QMPs are not able to get their confidence and commitment to the programmes. This is another

significant finding of our study. Compulsory participation for QMPs registered greater problem of commitment and confidence from employees.

Lack of empowerment and participation is perceived to a greater extent by older organizations and newer QMPs. The same reason as above may be given here. Non-involvement of union leaders reduced the participation from employees significantly. Though organizations giving benefits to employees for participation did not get their commitment and confidence, but it certainly increased participation. Also, compulsory participation is found to increase the involvement of employees in QMPs though the issue of compulsory participation is quite debatable and violates the principles of QM.

Inadequate knowledge and understanding of QM systems is perceived to a greater extent by lower managers. Since they deal with the employees mostly, are aware of their level of knowledge and hence reported. Newer QMPs found this problem more as all the employees may not have grasped the true understanding of the QM system completely.

It may seem from the above discussion that it is quite easy to reduce the employee barrier by controlling the contextual variables to its extent. But a close look in fact tells the opposite. It is found to be the most difficult factor to control. The variable 'level of management' only deals with the perceptions of the lower managers and hence is beyond control. Only we can say that they need more attention from middle and top managers so that they don't get frustrated as a result of this problem of perception through which they start loosing confidence in the system and on the programmes. Age of organization and age of QMPs are beyond control. Older QMPs can be suggested to take up massive change programmes aimed at employees which cannot be guaranteed to yield a solution. The newer QMPs can be suggested to wait patiently as the problems are found to reduce over time as seen for older QMPs. Variables like union leaders involvement can be controlled only to the extent if the organization has a union. Benefits given to employees for participation show both positive and negative results. Participation is increased but commitment of employees is reduced. Similarly, compulsory participation though increased involvement of employees in the QMPs, it certainly found to have decreased commitment and confidence of employees on the QM system. So we see that this barrier is most difficult to control and can be said as the responsible factor for failure of most of the QMPs. The management needs to take care of this composite factor to ensure successful implementation of QMPs.

4.8 Suggested Actions for the Problems of Implementation

This section tries to give a general suggestion to reduce the problems of implementation that we have discussed earlier. This is carried out after analyzing the data on our questionnaire by the methods that we have already discussed. Suggested actions for the above problems are given in Table 4.8.1 below.

TABLE 4.8.1: List of Suggested actions for management regarding the implementation Problems

Barrier	Suggested Actions
Managerial Barrier	1. Well defined vision and mission for the programme 2. Show of commitment from top management for QMPs 3. Consistent approach towards quality policies 4. Efforts to retain QM experts in the organization 5. Decentralized decision making in the enabling structure 6. Support for middle managers from top management 7. Establishment of a functional QM department 8. Sustained management effort over time
Systemic Barrier	1. Sufficient resource made available to the programmes at the right time 2. Adequate training for employees in quality 3. Specific recognition and reward system for employees involved in QMPs 4. Well defined standards for quality processes 5. Proper customer feedback system which should reach employees in the organization 6. Establishment of a functional QM department to take care of above 7. More needs to be done for larger organizations
Organizational Barrier	1. Establish proper internal communication systems in the organization 2. Share experiences regarding QM across programmes and departments 3. Encourage teamwork in QMPs 4. Work towards reducing inter-unit conflict 5. Seek support from union (for organizations having union) 6. Establishment of a QM department to take care of the problems above

APPENDIX 4.1

Mean values for Individual Items significant by contextual variables

TABLE A.1: *Mean values for items significant for Managerial Barrier*

Items	Level of Management			Age of QMPs		Presence of QMD	
	Top	Middle	Lower	New	Old	No	Yes
Lack of Top Management Comitment							
1.1 Top managers often find it difficult to attend quality related meetings and seminars due to their hectic schedule	2.46	3.88	3.67	3.12	3.46	3.65	3.11
1.2 Top managers rarely guide the teams working on quality related projects with necessary technical assistance they need from time to time	2.58	3.79	3.54	3.08	3.55	3.72	3.20
1.3 Top managers rarely come for help when a team working on a quality related project face trouble due to internal disputes among the departments	2.38	3.84	3.62	3.11	3.60	3.79	3.16
No proper vision or mission for QMPs							
3.1 Quality goals of the company are not clearly defined	3.05	3.63	3.49	-	-	3.45	3.03
3.2 Employees are unaware of the direction to which this quality management program will take the company	3.12	3.70	3.52	-	-	3.58	3.13
3.3 The company has not established quality as a clear priority	3.09	3.78	3.40	-	-	3.61	3.06
Short-term focus towards quality policies							
4.1 Often short-term quality policies are made which are counter productive in the long run	-	-	-	3.87	3.16	3.70	3.18
4.2 Objectives of the QMPs keep changing frequently	-	-	-	3.76	3.08	3.79	3.20

Items	Level of Management			Age of QMPs		Presence of QMD	
	Top	Middle	Lower	New	Old	No	Yes
Centralized decision making in the enabling structure for QMPs							
9.1 A decision taken by the steering committee is required to be approved by top management committee for QMP prior to its implementation	2.78	3.46	3.81	3.56	3.18	3.66	3.24
9.2 Often suggestions coming from the quality committees are sent to top management committee for its approval	2.86	3.50	3.96	3.68	3.25	3.78	3.31
9.3 Often steering committees and top management committee refer a decision related to quality to person or department outside these committees	2.64	3.38	3.84	3.49	3.27	3.59	3.26
Lack of expertise in QM in the company							
20.1 Quality leaders in the organization doesn't have expertise in quality management	2.84	3.38	3.64	3.56	3.22	3.46	3.11
20.2 Top management of QM steering committee is rarely a source of new ideas for work development	2.73	3.26	3.56	3.68	3.17	3.51	3.23
20.3 Members of steering committee are rarely able to solve the quality related problems in the organization	2.71	3.30	3.71	3.87	3.21	3.69	3.05
High turn over in key executives associated with QM							
23.1 The QM programs get delayed significantly due to change in key executive positions frequently	3.00	3.12	3.61	3.24	3.52	-	-
23.2 The essence of the program gets lost upon transfer of key executives	3.09	3.06	3.56	3.12	3.63	-	-

TABLE A.2: *Mean value for the items significant by Organizational Barrier*

Items	Age of Organization		Size of Organization		Presence of QM deptt.	
	New	Old	Medium	Large	No	Yes
Inadequate use of teamwork for QMPs						
14.1 The organization rarely encourages collective projects in quality	3.06	3.69	-	-	3.90	2.64
14.2 The organization rarely expects that employees work as team in quality related projects	3.17	3.78	-	-	3.81	2.59
14.3 Cross-functional teams are more appropriate than single department teams in carrying out the quality projects	3.01	3.72	-	-	3.78	2.72
Inter-unit or inter-departmental conflict						
15.1 The QMP is not very well coordinated amongst different units and departments in the company	3.16	3.56	3.21	3.66	-	-
15.2 Inter-unit or inter-departmental battles cause great problems for the quality program	3.25	3.68	3.17	3.53	-	-
15.3 Innovations in quality related areas by a department are not used by others to their advantage	3.21	3.49	3.11	3.57	-	-
Ineffective internal communication systems						
16.1 Corporate objectives of quality management are rarely translated to all levels in the organization	3.06	3.71	3.35	3.64	-	-
16.2 Cross-functional teams are rarely preferred in every work related to quality in the company	3.02	3.60	3.29	3.52	-	-
16.3 Resource libraries are not established for open information about QM to be shared by all employees of the organization	3.13	3.73	3.24	3.61	-	-
16.4 Communication channels doesn't exist up, down and sideways within the company	3.26	3.81	3.36	3.60	-	-
Learning and experiences are not shared across QMPs						
17.1 Steering committee for a QMP rarely uses the knowledge and experiences of other or previous steering committees in carrying out the quality related projects	3.24	3.64	3.33	3.76	3.86	3.35
17.2 Learning at one location in QM does not reach another location in the organization	3.31	3.66	3.25	3.83	3.77	3.24
Lack of support from Union for the QMPs						
21.1 Most of the union leaders rarely attend the meetings related to quality management	3.01	3.80	-	-	3.66	3.11
21.2 Union leaders rarely encourage workers to participate in the quality related group activities	3.12	3.84	-	-	3.74	3.05
21.3 Quality related group activities ac often stopped during labour problems	3.08	3.76	-	-	3.71	3.14

TABLE A.3: *Mean value for the items significant by Systemic Barrier*

Items	Size of Organization		Presence of QM deptt.	
	Medium	Large	No	Yes
Insufficient resources for QMPs				
2.1 Obtaining resource for QMP's is a problem	3.46	3.08	-	-
2.2 Often quality related projects undertaken by teams & approved by steering committee are delayed due to lack of resource	3.51	3.02	-	-
2.3 Quality related projects requiring high resources are very difficult to get approved from top management committee	3.48	3.13	-	-
Conflicting quality goals because of large number of quality programs at place				
5.1 Employees are confused regarding quality goals of the organization because of large number of quality projects running simultaneously	2.80	3.51	3.87	3.01
Underdeveloped quality standards				
6.1 Standard measures of quality doesn't exist with all processes	-	-	3.70	3.13
6.2 There is frequent failure of the system because of quality related problems	-	-	3.63	3.08
6.3 Any type of failure in processes is not reported instantly before that goes to next stage for processing	-	-	3.66	3.01
Insufficient quality training and education for the employees				
18.1 Rarely employees of the organization are aware of the quality programs existing in the organization	3.12	3.84	3.35	2.68
18.2 A few management and non-management employees have received adequate formal training for quality.	3.08	3.81	3.20	2.59
18.3 Employees are rarely trained in QM for the skills they need to operate effectively in the changed environment	3.16	3.76	3.31	2.70
18.4 Both management and non-management employees attend quality seminars and workshops rarely	3.19	3.65	3.25	2.56
Lack of recognition and reward systems for employees in QMPs				
22.1 Performance in quality management is not tracked and reported at all levels	-	-	3.46	2.84
22.2 All employees in Quality Management are not recognized and rewarded for performance appropriately	-	-	3.40	2.76
22.3 Quality improvement accomplishments are not included in how an employee is rated and rewarded	-	-	3.53	2.75
Lack of customer feedback system				
24.1 Customer satisfaction information (feedback and response) is not collected on a regular basis	3.19	3.63	3.39	2.81
24.2 Customer feedback is rarely used to change the way the work is done	3.28	3.52	3.31	2.73
24.3 Customer related information is rarely disseminated regularly to different departments	3.22	3.57	3.24	2.68

TABLE A.4: *Mean value for the items significant by Employee Barrier*

	Level of Management			Age of Organization		Age of QMPs		Union's Involvement		Benefits Given		Nature of Participation	
	Top	Middle	Lower	New	Old	New	Old	No	Yes	Yes	No	Vol.	Comp.
Difficulty in changing employee attitude towards QMPs													
10.1 Often it is difficult to implement new ways of doing things within the company	3.14	3.47	3.70	3.15	3.68	3.78	3.15	3.53	2.91	-	-	3.16	2.68
10.2 It is not simple to change employee attitude as per the requirements of the QM system	3.21	3.31	3.61	3.20	3.57	3.74	3.04	3.62	2.86	-	-	3.28	2.70
10.3 The change in employee behavior hasn't been conducive to continuous quality improvement	3.28	3.46	3.67	3.13	3.59	3.68	3.11	3.59	2.98	-	-	3.10	2.58
10.4 Management and non-management employees aren't willing to change their ways to improve performance	3.26	3.58	3.63	3.09	3.59	3.65	3.12	3.61	2.94	-	-	3.18	2.66
Fear or Resistance to change the way the employees do things													
11.1 Both management and non-management employees rarely understand how change in their behaviour will affect them personally	3.21	3.40	3.62	3.30	3.89	3.72	3.10	-	-	3.08	3.90	3.39	2.84
11.2 Employees rarely think that change in work methods needed in QM will make their work redundant	3.28	3.34	3.76	3.21	3.86	3.74	3.05	-	-	3.01	3.98	3.26	2.89
Lack of commitment and confidence for QM from the employees													
12.1 Employees rarely understand the link between their jobs and the organizations' strategic plans and goals of QM	3.22	3.41	3.69	3.16	3.79	3.61	3.21	3.46	2.87	3.84	3.16	3.18	3.80
12.2 Employees rarely recognize and act on their responsibility to continuously improve their work processes	3.16	3.46	3.64	3.14	3.86	3.57	3.26	3.37	2.86	3.89	3.22	3.10	3.83

	Level of Management			Age of Organization		Age of QMPs		Union's Involvement		Benefits Given		Nature of Participation	
	Top	Middle	Lower	New	Old	New	Old	No	Yes	Yes	No	Vol.	Comp.
12.3 Employees aren't responsible for ensuring that services are at the quality level that customers expect	3.20	3.45	3.72	3.25	3.89	3.54	3.18	3.49	2.80	3.78	3.14	3.19	3.76
12.4 Employees rarely show confidence in the quality programs	3.26	3.34	3.58	3.18	3.84	3.66	3.24	3.51	2.86	3.76	3.19	3.22	3.71
12.5 Employees are not confident that successful work methods brought about by QMP's can change their work and environment	3.14	3.39	3.68	3.27	3.73	3.69	3.17	3.45	2.71	3.82	3.28	3.20	3.75
Lack of empowerment and participation of the employees													
13.1 Employees are not empowered to take their own decisions at their work place for organizational improvement	3.10	3.34	3.71	3.30	3.74	3.70	3.28	3.54	2.84	-	-	3.56	2.98
13.2 Self-controlled, self-managed and self-directed work teams are not preferred in the organization in quality related projects	3.14	3.38	3.66	3.33	3.69	3.73	3.22	3.61	2.98	-	-	3.49	2.92
13.3 Employee participation has not increased since the beginning of QMPs	3.02	3.26	3.74	3.21	3.77	3.61	3.23	3.43	3.00	-	-	3.57	2.82
Inadequate knowledge and understanding of QM systems													
19.1 The core concept of QM is not clear to many employees in the organization	3.04	3.31	3.68	-	-	3.87	3.01	-	-	-	-	-	-
19.2 Problem solving techniques of QM are not clear to employees at large	3.13	3.28	3.61	-	-	3.75	3.11	-	-	-	-	-	-

5

CONCLUSIONS

5.1 Introduction

It has been observed throughout the study that organizations implementing Quality Management Programmes (QMPs) often confront hurdles in the process of managing the organizational change associated with such programmes. At times, the changes initiated even lead to tension within the organization. This study not only highlighted the barriers within which the change agents - the managers involved in the implementation of the programmes - have to work, but also tried to explore the relationship of the problems with the organizational context as well as the approach of management in implementing such programmes.

Review of existing literature in the field of quality as well as organizational change provided us some vital issues that could be the source of major hindering factors during the implementation of QMPs. Literature enabled us to identify twenty-four major problems managers often confront during implementation of QMPs. In the next phase of the study, an instrument was developed for empirical investigation of the problems. The empirical investigation not only strengthened our understanding of the problems but also provided us an opportunity to explain the relationship of the problems with various contextual variables.

Samples are collected from 82 organizations across the country, industry and functional units. A total of 129 responses were taken for analysis after carefully going through the content. Organizations that participated in the survey started their QM activities at least two years back and either have an ISO 9000 / SEI - CMM certificate or are in the process of getting the certificate (refer sections 3.7, 3.8, 4.1 and Table 3.8.1).

This chapter presents a brief discussion on the findings of this research along with its limitations as well as scope for further research.

5.2 Research Findings

One of the significant contributions of this research is the development of four factors which describe and assess the potential barriers to QM implementation. These factors are empirically validated based on data obtained from practicing quality practitioners across the country, industry and functional units of the organizations. The results of this study are summarized below.

- Through a synthesis of current literature, supplemented by pilot study, we have found twenty-four problems often confronted by managers while implementing QMPs in their organizations. The problems are given in part 'B' of the questionnaire in Appendix 'D'. A discussion for these has already been presented in section 3.5.

- On average quality practitioners in Indian service industry indicated significantly higher perceived values of barrier than those in manufacturing industry in the attributes 'Expertise in QM', 'Quality training and Education', 'High turnover of key executives', 'Inadequate knowledge & understanding of QM' and 'Underdeveloped measurements in quality'. The maximum difference is the perception is observed with respect to the attribute 'Lack of expertise in QM'. Similarly, the quality practitioners in Indian manufacturing industry indicated higher perceived values of barrier than service industry in the attributes 'Insufficient resources for QMPs', 'Lack of top management commitment', 'Difficulty in changing employee attitude', 'Inter – departmental conflict' and 'Lack of customer feedback system'. The maximum difference in the perception is observed with respect to the attribute 'Difficulty in changing employee attitude'.

- The results of a PCA with varimax rotation revealed four major dimensions for potential barriers to QM implementation. They are 'Managerial Barrier', "Organizational Barrier', 'Systemic barrier' and 'Employee Barrier'.

- The composite factor managerial barrier is found to be affected by level of management, age of organization and presence of QM department. Middle managers, older organizations and absence of a functional QM department in the organization perceived this to the greatest extent. Analysis of the components has shown that this problem can be significantly reduced by a sustained top management commitment towards the QMPs. They guide the QMPs by reducing delay in decision making for implementation of

suggestions coming from bottom, giving a proper vision to the organization for QM by defining its quality goals in alignment with the broad organizational goals and feeling responsible to the programmes. Presence of a QM department in the organization also helps in ensuring a sustained top management commitment and at the same time retains experts in quality with it thereby making the implementation process a success. As middle managers' perception about the problems is higher, they should be paid attention suitably so as not to create disruption in the implementation process through their non cooperation.

- The factor organizational barrier is found to be significantly different by age and size of organization and presence of a functional QM department. Older and larger organizations perceived the problems to a greater extent while presence of a functional department for quality found this problem significantly lesser. Analysis of components revealed that this problem can be reduced to some extent through a functional QM department in the organization which is under control of the management. It tries to improve the interpersonal relationship within the organization through its stress on teamwork. Older and larger organizations facing the problems may try to establish proper communication channels within the organization to improve the interpersonal relations. They also should try to share the experiences and ideas regarding QM implementation among the units to reduce time and money.

- The factor systemic barrier is found to be significant by size of organization and presence of QM department. Larger organizations felt the problems to a greater extent where as a functional department in quality tried to solve them to some extent. Analysis of the components has shown that it can be managed to some extent by reducing the systemic problems existing in the organization. The organizations should try to impart sufficient training in quality to its employees. This helps in increasing the understanding of employees regarding the programmes and they take interest in it. The large organizations should try to focus on improving the customer feedback system. A functional QM department to some extent tries to solve these problems.

- The composite factor employee barrier emerged as the most critical factor to control. It is found to be significantly different by level of management where lower managers perceived this problem to the greatest extent, older organizations, newer QMPs non-

involvement of union leaders, the case of no benefits given to employees for participation and compulsory nature of participation. Perceptions of lower managers show that they are mostly concerned with the employee problems existing in the organization and should be given attention towards reducing it. Newer QMPs can only wait patiently for the situations to improve as the older QMPs has shown some improvements over time. Involvement of union leaders increases participation and commitment from employees but can only be tried by those organizations which have a union in it. The case of benefits given to employees for their participation in QMPs found both increase in participation on one side and reduction in committed employees on the other. Again, compulsory nature of participation though is found to be able to increase participation of employees, but is unable to get committed employees for QM. This shows the barrier is a critical one and very difficult to control. This may be the main factor for failure of the QM programmes in organizations. Management should put extra attention towards reducing these problems.

- Content analysis of the open-ended questions has shown that education of workers is the most significant factor for success for any QM initiatives. Also, voluntary participation of workers though is dictated by the principles of QM, is found unable to change employee attitude and behaviour. Our study result also has shown the same. Compulsory participation is also found unable to meet the objectives as we have seen from the analysis. The respondents also stressed on the need for a change in mindset of managers from traditional command and control to becoming a facilitator for the programmes.

5.3 Limitations of Research

Though the present study is able to collect responses from across the country, industry and different functional units in the organization, it has some limitations.

- The study focussed on the collecting responses from managers only. So possibility of getting biased responses cannot be denied. Inclusion of the workers involved in the group activities related to the programmes could have given less biased response for those problems.

- Most of the respondents were from quality department or are in some way related to the QMP of their respective organizations. So their response on the performance variables, and even barriers may be biased to some extent.

5.4 Scope for Further Research

- Most of the respondents for this study were from quality department or are associated with the quality programme of their organization. This study can be extended to include personnel from other departments also.

- A study can be carried out to focus on any particular cluster of the industry like automobile and IT etc. Comparisons can also be made between these industries regarding their perceptions.

- This study focussed on the internal problems of the organization which affect the implementation process. It can be extended to include the effect of external variables of the organizations on the implementation process.

- Educational background of workers emerged as a major factor from our content analysis which is not included in our set of contextual variables. This issue can be focused further to investigate the impact of educational background of employees on the success of employee involvement activities.

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APPENDIX 'A'

Overall picture of the Composite Factors of Barriers to QM Implementation

Factors	Level of Management	Age of Organization	Size of Organization	Age of QMPs	Union's Involvement	Benefits Given	Nature of Participation	Presence of QM Deptt.
Managerial Barrier	More for middle managers			More for older QMPs				More if no QM deptt. is present
Employee Barrier	More for lower managers.	More for older organizations		More for newer QMPs	More for non involvement	More if no benefit's given	More if participation is compulsory	
Organizational Barrier		More for older organizations	More for larger organizations					More if no QM deptt. Is present
Systemic Barrier			More for larger organizations					More if no QM deptt. is present

APPENDIX 'B'

Overall picture of Problems of QMP implementation with contextual variables

Items	Level of Management	Age of Organization	Size of Organization	Age of QMPs	Union's Involvement	Benefits Given	Nature of Participation	Presence of QM Deptt.
Lack of Top management Commitment	More for middle mgrs.			More with older QMPs				More in case of absence
Insufficient resources for QMPs			More in smaller orgns.					
No proper vision or mission for the QMPs	More for middle mgrs.							More in case of absence
Short-term focus or inconsistent approach towards quality policies				More in newer QMPs				More in case of absence of QM deptt.
Conflicting quality goals because of large number of quality programs at place			More for larger organizations					More in case of absence of QM deptt.
Underdeveloped quality standards								More in case of absence
Centralized decision making in the enabling structure for QMPs	More for lower managers			More in newer QMPs				More in case of absence of QM deptt.
Difficulty in changing employee attitude towards QMPs	More for lower managers	More in older organizations		More in newer QMPs	More if union is not involved		More for voluntary participation	
Fear or Resistance to change the way the employees do things	More for lower managers	More in older organizations		More in newer QMPs		More for benefits not given	More for compulsory participation	
Lack of commitment and confidence for QM from the employees	More for lower managers	More in older organizations		More in newer QMPs	More if union is not involved	More if benefits given	More for compulsory participation	

Items	Level of Management	Age of Organization	Size of Organization	Age of QMPs	Union's Involvement	Benefits Given	Nature of Participation	Presence of QM Deptt.
Lack of empowerment and participation of the employees	More for lower managers	More in older organizations		More for newer QMPs	More if union is not involved	More if benefits not given	More if participation is voluntary	
Inadequate use of teamwork for QMPs		More for older orgns.						More in case of absence
Inter-unit or inter-departmental conflict		More for older orgns.	More for larger orgns.					
Ineffective internal communication systems		More for older orgns.	More for larger orgns.					
Learning and experiences are not shared across QMPs		More for older orgns.	More for larger orgns.					More in case of absence
Insufficient quality training and education for the employees			More for larger organizations					More in case of absence of QM deptt.
Inadequate knowledge and understanding of quality management systems	More for lower managers			More for newer QMPs				
Lack of expertise in Quality Management in the company	More for middle mgrs.			More for new QMPs				More in case of absence
Lack of support from Union for the QMPs		More for older orgns.						More in case of absence
Lack of recognition and reward systems for employees in QMPs								More in case of absence of QM deptt.
High turnover or changes in key executives associated with the QMPs	More with top managers (Service only)			More for Older QMPs				
Lack of customer feedback system			More for larger orgns.					More in case of absence

APPENDIX 'C'

List of Organizations Surveyed

Organization	Age of Organization	Employee Strength	Industry Sector
1. ABB, West Bengal	51	9000	Manufacturing (Engg.)
2. Advani – Oerlikon, Ahmednagar	49	1100	Manufacturing (Engg.)
3. Alfa Laval India, Pune	64	990	Process
4. Allen – Bradley, Ghaziabad	17	215	Manufacturing (Engg.)
5. Allied Nippon, Ghaziabad	08	500	Manufacturing (Engg.)
6. Alstom	08	6690	Manufacturing (Engg.)
7. Amco Batteries, Bangalore	46	620	Manufacturing (Engg.)
8. Antrix Corp., Bangalore	09	ISRO Strength	Service
9. Asian paints, Mumbai	58	2244	Process
10. Ashok Leyland, Chennai	53	14,500	Manufacturing (Engg.)
11. Apollo Tyres, Trichur	25	6200	Process
12. ATE Enterprise, Mumbai	62	300	Process
13. Baan Infosystems, Mumbai	13	250	Service (IT)
14. Bajaj Auto, Aurangabad	37	6800	Manufacturing (Engg.)
15. Bajaj Auto, Pune	56	6500	Manufacturing (Engg.)
16. Ballarpur Industries, Rishikesh	54	12,000	Process
17. BEL, Bangalore	46	15,739	Manufacturing (E & E)
18. Bells Controls, Mysore	71	700	Manufacturing (E &E)
19. BEML, Kgf	36	16,000	Manufacturing (Engg.)
20. BFL Software, Bangalore	09	750	Service (IT)
21. Bharti Telecom, Ludhiana	16	900	Service (IT)
22. BHEL, Hardwar	44	62,500	Manufacturing (Engg.)
23. Birla Yamaha, New Delhi	16	450	Manufacturing
24. Birla Soft, Noida	-	-	Service (IT)
25. BPL Limited, Bangalore	37	3554	Manufacturing (Engg.)
26. CBSI, Bangalore	09	425	Service (IT)
27. CG-Hartman & Brawn, Gurgaon	09	181	Manufacturing (Engg.)
28. Chemtrols Ltd., Mumbai	19	240	Process
29. Citicorp OSL, Mumbai	16	558	Service (IT)
30. CMC Limited, West Bengal	-	2813	Service (IT)
31. Control & Switchgear, Ghaziabad	34	2000	Manufacturing (Engg.)
32. Crompton Greaves, Mumbai	63	12,500	Manufacturing (Engg.)
33. Daewoo Motors, Ghaziabad	15	2500	Manufacturing (Engg.)
34. Digital India, Bangalore	7	434	Manufacturing (E & E)
35. Duncan Fertilizer, Kanpur *	29	1400	Process
36. DUPONT,South Asia, TN	08	108	Manufacturing (Engg.)
37. Eicher Limited, Haryana	45	-	Manufacturing (Engg.)
38. Escorts Limited, Faridabad	56	8000	Manufacturing (Engg.)
39. Forbes Marshall Group, Pune	42	750	Manufacturing (Engg.)
40. Ford India, Tamil Nadu	06	730	Manufacturing (Engg.)

Appendix 'C' contd....

Organization	Age of Organization	Employee Strength	Industry Sector
41. Godrej-GE Appliances, Mumbai	08	3900	Manufacturing
42. General Motors, Gujurat	06	526	Manufacturing (Engg.)
43. HCL Consulting, Gurgaon	-	-	Service (IT)
44. HERO Motors, Ghaziabad	12	850	Manufacturing (Engg.)
45. Hindustan Motors, Dhar (MP)	58	14,868	Manufacturing (Engg.)
46. HLL, Mumbai	-	-	Manufacturing
47. HMT, Pinjore	36	-	Manufacturing (Engg.)
48. Infosys, Bangalore	19	3700	Service (IT)
49. Infosys, Pune	19	3700	Service (IT)
50. Intel , Mumbai	22	127	Manufacturing (E & E)
51. INDAL, West Bengal	62	8200	Manufacturing (Engg.)
52. Kirloskar Brothers, Pune	80	4340	Manufacturing (Engg.)
53. Kirloskar Oil Engines, Pune	54	2200	Manufacturing (Engg.)
54. L & T Komatsu Ltd., Bangalore	26	1100	Manufacturing (Engg.)
55. LML, Kanpur *	28	8194	Manufacturing (Engg.)
56. LSL, Kanpur *	17	320	Manufacturing (Engg.)
57. LTM Ltd., Chennai	28	503	Manufacturing (Engg.)
58. Lucas TVS, Chennai	39	2500	Manufacturing (Engg.)
59. Maruti Udyog Ltd., Gurgaon	17	5600	Manufacturing (Engg.)
60. M & M, Nasik	55	18,821	Manufacturing (Engg.)
61. Mastek Limited, Mumbai	18	700	Service (IT)
62. Motorola (P) Ltd., Bangalore	07	285	Service (IT)
63. NICCO Corporation, WestBengal	58	3000	Manufacturing (E & E)
64. NIIT, New Delhi	19	3400	Service (IT)
65. NPC, Kanpur	42	450	Consultancy
66. Oracle Software, New Delhi	-	-	Service (IT)
67. Ordnance Factory, West Bengal	96	7351	Manufacturing
68. PAL, Pune	78	835	Manufacturing (Engg.)
69. Pentafour, Chennai	24	1409	Service (IT)
70. Phoenix Yule Ltd., Kgf	21	624	Process
71. RAMCO Systems, Chennai	-	-	Service (IT)
72. River Run Software, Noida	-	-	Service (IT)
73. SAIL, Bhilai	43	47,000	Manufacturing (Engg.)
74. Satyam Limited, Andhra Pradesh	13	900	Service (IT)
75. SCHLUMBERGER	92	60,000	Service
76. Standard Radiators Ltd., Vadodra	35	200	Process
77. TAFE, Chennai	40	1150	Manufacturing (Engg.)
78. TELCO, Lucknow	55	18,855	Manufacturing (Engg.)
79. Texas Instruments, Bangalore	15	250	Manufacturing (E & E)
80. TI Diamond Chain, Chennai	40	1200	Manufacturing
81. TISCO, Jamshedpur	92	55,000	Manufacturing (Engg.)
82. Veritas Software	-	-	Service (IT)
83. Wesman Engineering, WB	49	575	Manufacturing (Engg.)
84. Wipro – GE M.S., Bangalore	09	600	Manufacturing
85. Wipro Infotech, Bangalore	20	3756	Service (IT)

APPENDIX 'D'

Questionnaire used for Research

QUESTIONNAIRE

*This questionnaire consists of **four** parts. **Part A** addresses general information regarding your organization and it's quality programmes. **Part B** deals with the list of potential barriers. You are required to select those barriers which are of importance for your organization. **Part C** is your own assessment of some of the problems commonly faced by management during the implementation of the quality initiatives. **Part D** attempts to assess the impact your company's quality programmes have made. **Please feel free to attach brochures or supporting documents regarding your company's Quality Management Programme if you find them relevant to the questions and mention that at the appropriate place.***

PART 'A'

Instructions:
*Most of the questions in this part require simple YES / NO answers **(Please strike the appropriate response)** or simple information regarding your organization.*

---

01. Name of the company: _____

02. Primary Product/ Service of the Company: _____

03. Please specify your Department: _____

Designation: _____

1.1 When was your company incorporated? Year _____

1.2 What is the present employee strength of your company? _____

1.3 In which category of business would you like to place your company ? (***please tick the appropriate category)***

a. _____Manufacturing (Electrical and Electronics)
b. _____Manufacturing (Engineering)
c. _____Manufacturing (Others)
d. _____Process
e. _____Service (customer)
f. _____Service (IT)
g. _____Others (*Please Specify)*_____

2.1 As you are well aware, there are many reasons for pursuing and achieving Quality Management Program, Please rank in order, the THREE most important reasons for initiating QM program at your company. (***Rank reasons where 1 = "most important" etc.***)

_____ Requirement of European Union (EU) regulations
_____ Customer demand / expectation
_____ Market advantage over competitors (preferred supplier status)
_____ Quality benefits for organization (e.g. higher production, reduced costs of production etc.)
_____ Part of larger strategy (Global Competitiveness)
_____ Non EU government requirement
_____ Others (*Please Specify*)_____

*This questionnaire consists of four parts. **Part A** addresses general information regarding your organization and it's quality programmes. **Part B** deals with the list of potential barriers. You are required to select those barriers which are of importance for your organization. **Part C** is your own assessment of some of the problems commonly faced by management during the implementation of the quality initiatives. **Part D** attempts to assess the impact your company's quality programmes have made. **Please feel free to attach brochures or supporting documents regarding your company's Quality Management Programme if you find them relevant to the questions and mention that at the appropriate place.***

PART 'A'

Instructions:
*Most of the questions in this part require simple YES / NO answers **(Please strike the appropriate response)** or simple information regarding your organization.*

---

01. Name of the company: _____

02. Primary Product/ Service of the Company: _____

03 Please specify your Department: _____

Designation: _____

---

1 1 When was your company incorporated? Year _____

1.2 What is the present employee strength of your company? _____

1.3 In which category of business would you like to place your company ? ***(please tick the appropriate category)***

a. _____Manufacturing (Electrical and Electronics)
b. _____Manufacturing (Engineering)
c. _____Manufacturing (Others)
d. _____Process
e. _____Service (customer)
f. _____Service (IT)
g. _____Others (*Please Specify*)_____

2.1 As you are well aware, there are many reasons for pursuing and achieving Quality Management Program, Please rank in order, the THREE most important reasons for initiating QM program at your company. (***Rank reasons where 1 = "most important" etc.***)

_____ Requirement of European Union (EU) regulations
_____ Customer demand / expectation
_____ Market advantage over competitors (preferred supplier status)
_____ Quality benefits for organization (e.g. higher production, reduced costs of production etc.)
_____ Part of larger strategy (Global Competitiveness)
_____ Non EU government requirement
_____ Others (*Please Specify*)_____

If yes, Please indicate your involvement (*putting tick marks*)

_____ Member of Quality Council / Steering Committee
_____ Member of Quality Circle / Small Group Activity / Task force
_____ Any other, (*please specify*)_____

7.2 Have you attended any training programme(s) related to quality or quality management ? **YES / N**
If yes, please specify the subjects covered by the training programme(s) you have attended:_____

PART 'B'

Instructions:

This section tries to identify the potential barriers in the implementation of QMPs in your organizatio
There are some statements and you have three options. Tick the option you find most appropriate fo
your organization. If you believe that it is ***not at all a barrier*** *tick the option* ***'1'****, if you believe it i*
reasonably a barrier *tick the option* ***'2'*** *and if you believe it is the* ***greatest barrier*** *tick the option* ***'3'****.*

	not at all a barrier (1)	reasonably a barrier (2)	greatest barrier(3)
Lack of Top management's commitment through actions (such as not allocating adequate time and resource)			
Insufficient resources for Quality Management Programmes			
No proper vision or mission for the quality management programs			
Short-term focus or inconsistent approach towards quality policies			
Conflicting quality goals because of large number of quality programs at place at the same time in the organization			
Underdeveloped quality standards			
More stress on 'Quantity' rather than 'Quality'			
Use of a pre-packaged quality program			
Centralized decision making in the enabling structure for QMPs			
Difficulty in changing employee attitude towards QMPs			
Fear or Resistance to change the way the employees do things			
Lack of commitment and confidence for QM from the employees			
Lack of empowerment and participation of the employees			
Inadequate use of teamwork for QMPs			
Inter-unit or inter-departmental conflict			
Ineffective internal communication systems			
Learning and experiences are not shared across QM programs			
Insufficient quality training and education for the employees			
Inadequate knowledge and understanding of quality management systems			
Lack of expertise in Quality Management in the company			
Lack of support from Union for the QMPs			
Lack of recognition and reward systems for employees in Quality Management Programmes			
High turnover or changes in key executives associated with the Quality Management Programmes			
Lack of customer feedback system			

PART 'D'

Instructions:

Please give your rating in terms of the improvements that have taken place since the implementation of the Quality Management Programmes in the following aspects of your organization in a scale from Very Low to Very High.

	VERY LOW	LOW	MODE-RATE	HIGH	VERY HIGH
1. Quality of output of your organization					
2. Relationship among all the employees of your organization					
3. Minimization of waste					
4. Level of knowledge of the employees related to quality management activities					
5. Overall minimization of cost					
6. Quality of materials supplied/service delivered					
7. Levels of customer satisfaction					
8. Control over operational activities					
9. Participation of employees in decision making					
10. Communication of information between management and employees					
11. Change in employee attitude and behaviour					
12. Reduction of inter-departmental barriers					

IF YOU HAVE ANY COMMENTS OR EXPERIENCES TO SHARE BEYOND WHAT HAS BEEN COVERED IN THE QUESTIONNAIRE SO FAR, PLEASE GIVE THEM UNDER THE FOLLOWING HEADS:

A.) THE QUALITY MANAGEMENT PROGRAMME OF YOUR ORGANIZATION:

B.) THE BARRIERS AND PROBLEMS WITH THE QMPs:

Instructions:

*Please give your rating in terms of the **improvements** that have taken place since the implementation of the Quality Management Programmes in the following aspects of your organization in a scale from Very Low to Very High.*

	VERY LOW	LOW	MODE-RATE	HIGH	VERY HIGH
1 Quality of output of your organization					
2 Relationship among all the employees of your organization					
3 Minimization of waste					
4 Level of knowledge of the employees related to quality management activities					
5 Overall minimization of cost					
6 Quality of materials supplied/service delivered					
7 Levels of customer satisfaction					
8. Control over operational activities					
9. Participation of employees in decision making					
10. Communication of information between management and employees					
11 Change in employee attitude and behaviour					
12. Reduction of inter-departmental barriers					

IF YOU HAVE ANY COMMENTS OR EXPERIENCES TO SHARE BEYOND WHAT HAS BEEN COVERED IN THE QUESTIONNAIRE SO FAR, PLEASE GIVE THEM UNDER THE FOLLOWING HEADS:

A.) THE QUALITY MANAGEMENT PROGRAMME OF YOUR ORGANIZATION:

_____

_____

_____

_____

_____

_____

B.) THE BARRIERS AND PROBLEMS WITH THE QMPs:

_____

_____

_____

_____

_____